

# OCTOBER -2021

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# POLITY

## *Welfare Schemes for Vulnerable Sections of the population by the Centre and States and the Performance of these Schemes*

### **1. Govt. asks top court to set quota norms for promotions**

- » Prelims: Important constitutional articles dealing with the aspect of reservation- Article 16(4) and article 335

#### **Background**

- The Supreme Court called it “disturbing” that the Union government did not discontinue reservation in promotion for people belonging to Scheduled Castes and Scheduled Tribes (SC/STs) even after their numbers exceeded the upper ceiling of 15% and 7.5% respectively, of positions in some classes of central government jobs.

#### **Context:**

- In response the Union government has urged the Supreme Court to do away with the requirement of collecting quantifiable data by the Centre and States to determine the representation of people belonging to Scheduled Castes (SCs) and Scheduled Tribes (STs) while implementing reservation in promotion.
  - \* The government has raised this issue primarily because even after seventy-five years of independence, India has not been able to bring members of the Scheduled Castes and Scheduled Tribes on a par with the forward classes of society.

#### **Details:**

- The attorney general brought to the notice of the Supreme Court that it was tough for a member of the SC/ST to reach the ‘Group A’ category jobs.
- It was suggested that the Supreme Court must draw the basis for reservation in promotions for SC/ST candidates to fill up vacancies in top jobs.
- Centuries of discrimination and prejudice suffered by the SCs and STs in India’s societal structure pose real barriers of access to opportunity to them.
- There is a need for special provisions and reservations in order to bring them to a level playing field.

#### **Provisions in the Indian Constitution:**

##### **Article 16(4A):**

- In 1995 the Parliament adopted the seventy-seventh amendment by which clause (4A) was

inserted into Article 16 to enable reservation to be made in promotion for SCs and STs.

- \* Article 16 (4A) states that the State Government is required to collect quantifiable data to check the adequacy of representation of the SCs/STs in public services in their state, and it is then upon this data that the government decides whether reservation is required to be given or not.
- The validity of the seventy-seventh and eighty-fifth amendments to the Constitution and of the legislation enacted in pursuance of those amendments was challenged before the Supreme Court in the Nagaraj case.
- Upholding the validity of Article 16 (4A), the Supreme Court then said that it is an enabling provision.
  - \* “The State is not bound to make reservation for the SCs and STs in promotions. But, if it seeks to do so, it must collect quantifiable data on three facets
    - » The backwardness of the class;
    - » The inadequacy of the representation of that class in public employment; and
    - » The general efficiency of service as mandated by Article 335 would not be affected”.
  - \* The aspect of quantifiable data was endorsed by another Constitution bench by its 2018 ruling in the Jarnail Singh case which also mandated the exclusion of the “creamy layer” before providing for reservation in promotions.
- It was ruled that the constitutional amendments do not abrogate the fundamentals of equality.

##### **Article 335:**

- \* Article 335 recognises that special measures need to be adopted for considering the claims of SCs and STs in order to bring them to a level playing field.
- \* The provision aids in fostering the real and substantive right to equality to the SCs and STs.
- \* It also emphasises that the need to maintain the efficiency of administration cannot be construed as a shackle on adopting these special measures designed to uplift and protect the welfare of the SCs and STs.

## *Salient Features of the Representation of People's Act*

### **2. Making parties constitutional**

- » Mains: Concerns associated with the functioning of political parties in India; Examples of different models around the world and their relevance for India
- The article talks about the need for making political parties in India constitutional.

#### **Importance and Nature of Political Parties:**

A political party is an organised group of citizens who hold common views on governance and act as a political unit that seeks to obtain control of the government with a view to further the agenda and policy they profess.

- They are indispensable links between the people and the representative machinery of government.
- Political parties maintain a continuous connection between the people and those who represent them either in government or in the opposition.
- Political parties have extra-legal growth in almost every democratic country.
  - \* The American Constitution does not presume the existence of political parties.
  - \* In Britain too, political parties are still unknown to the law.
- Similarly, political parties in India are extra-constitutional, but they are the breathing air of the political system.

#### **The German Model:**

- The Basic Law of the Federal Republic of Germany gives constitutional status to political parties. Its Article 21 deals with their status, rights, duties and functions.
- It provides:
  - \* Political parties shall participate in the formation of the political will of the people. They may be freely established. Their internal organisation must conform to democratic principles. They must publicly account for their assets and for the sources and use of their funds.
  - \* Parties that, by reason of their aims or the behaviour of their members, seek to undermine or abolish the free democratic basic order or to endanger the existence of the Federal Republic of Germany shall be unconstitutional.

- \* The Federal Constitutional Court shall rule on the question of unconstitutionality. Details shall be regulated by federal laws.

#### **Internal Democracy in Political Parties:**

- Political parties in developed nations maintain high levels of internal democracy.
- In the U.K., the Conservative Party has the National Conservative Convention as its top body. It has a Central Council and an Executive Committee. The Central Council elects its President, a Chairman and Vice-Chairmen at its annual meeting. It also elects an Executive Committee which meets once a month.
- In the U.S., both the Democratic and the Republican parties have the National Committee as their top decision-making body. The National Committee plays an important role in the presidential election and agenda-setting.

#### **The German Model for India:**

- As compared to the U.S. and the U.K. models, the German model of constitutionalising political parties is more desirable for India.
- Section 29A(5) of the Representation of the People Act, 1951 is the only major statutory provision dealing with political parties in India.
  - \* It orders that a political party shall bear true faith and allegiance to the Constitution of India as by law established, and to the principles of socialism, secularism and democracy, and would uphold the sovereignty, unity and integrity of India.

#### **Issues:**

- Political parties are vital players in the political system and need constitutional regulation.
- Most of the parties are openly caste- or religious-based.
- Their finances are dubious and opaque.
- Most of the parties are family fiefdoms.
- There are no periodical in-party elections in Indian parties except in a few.

#### **Conclusion:**

- The Indian Constitution is one of the longest constitutions in the world. It even elaborately deals with co-operative societies.
- The right to form co-operative societies is a fundamental right under Article 19 (1)(c), but the right to form political parties is not.
- Political parties are the agents of democracy and safety valves in the political system. They desperately need reform.



- Hence, it is high time to constitutionalise political parties to ensure in-party democracy, to impart transparency in their finances, and to de-communalise them.

### ***Welfare Schemes for Vulnerable Sections of the population by the Centre and States and the Performance of these Schemes***

### **3. SC questions income limit for EWS quota**

- » Mains: Evolution of reservation framework in India over the years

#### **Context**

- The Supreme Court has asked the government to explain how it zeroed in on the figure of '₹8 lakh' as the annual income criterion to identify Economically Weaker Sections (EWS) among the forward classes of society for grant of 10% reservation in medical admissions under the all-India quota (AIQ).
- The court was hearing a batch of petitions filed by NEET aspirants challenging a July 29 notification of the Centre announcing 27% quota to OBCs and 10% reservation to EWS in the all-India quota category.

#### **Details:**

- The bench raised questions as to how the limit of Rs eight lakh can be the same for every place in the country.
- The Centre said fixing a limit of Rs eight lakh annual income for the EWS category is a matter of policy based on the National Cost of Living Index.

#### **Significance:**

- The Supreme Court's query is significant as the One Hundred and Third Constitutional Amendment of 2019, which introduced the 10% EWS quota, is itself under challenge before a larger Bench.
  - \* As a result of the 103rd Constitutional Amendment, the government introduced a 10% EWS reservation for general category candidates.
  - \* This is for all those candidates who are not covered under any reservations (such as OBC, SC, ST, and except PH and Ex-servicemen criteria) and belong to economically backward sections.
  - \* The amendment is under question for making economic criteria as the sole ground for grant of reservation benefits.

### ***Miscellaneous***

### **4. Crime and the pandemic**

- » Prelims: Crime in India Report- trends

#### **Context**

- National Crime Records Bureau (NCRB) recently released the 'Crime in India' annual report.
- The article talks about the nature and patterns of crimes that were registered in 2020, in the backdrop of COVID-19 induced lockdown.

#### **NCRB:**

- It is an Indian government agency responsible for collecting and analyzing crime data as defined by the Indian Penal Code (IPC) and Special and Local Laws (SLL).
- NCRB is headquartered in New Delhi and is part of the Ministry of Home Affairs (MHA), Government of India.

#### **Crime in India Report:**

- The first edition of 'Crime in India' pertains to the year 1953 and the latest edition of the report pertains to the year 2020.
- This is the oldest and the most prestigious publication brought out by NCRB.
- The data for the report is collected by State Crime Records Bureaux (SCRxBx) from the District Crime Records Bureaux (DCRBx).
- Data on megacities are also collected.
- The annual report, 'Crime in India-2020', needs to be carefully analysed before obtaining insights or making State-wise comparisons.

#### **Economic and Cyber-crimes:**

- The lockdown led to an overall fall in crime related to theft, burglary and dacoity.
- While there was a reduction in the registered number of economic offences (by 12% since 2019), cybercrimes recorded an increase of 11.8%.
- The increase in cybercrimes is cause for concern as this requires sharper law enforcement as seen even in highly developed societies.

#### **Sedition:**

- While cases related to sedition declined from 93 in 2019 to 73 in 2020, Manipur and Assam led with 15 and 12 cases each.
- Sedition has increasingly been used as a weapon to stifle dissent and this trend needs to be reversed urgently.

#### **Violence against Women:**

- There are significant variances in case registration across States and Union Territories, especially serious crimes pertaining to rape and violence against women.

- States/UTs such as Tamil Nadu with 1808.8, Kerala (1568.4) and Delhi (1309.6) recorded the highest crime rate (crimes per one lakh people) overall.
- The numbers are a reflection of better reporting and police registration of cases in these States and the capital city.

#### **Mismatch between the NCW and NCRB:**

- There was an 8.3% decline in registered cases of crimes against women in 2020 (of which the bulk of them, 30.2%, were of the category “Cruelty by husband or his relatives”).
- This number has to be assessed along with the fact that the year saw prolonged lockdowns during the first wave of the coronavirus pandemic.
  - \* This period coincided with a high number of complaints of domestic violence.
  - \* The number of complaints received by the National Commission for Women registered a 10-year high as of June 2020.
- The seeming mismatch between the NCW and NCRB data must be studied and can only be explained by a lack of registration of cases in some States where crime reporting remains sluggish either due to a fear of doing so or a lackadaisical approach by law enforcement.

#### **Conclusion:**

- The lockdown had a bearing on the patterns of crimes that were registered in 2020.
- The sudden lockdown announced in March 2020 immediately prompted grave concerns around escalating rates of domestic violence.
- Restrictions on mobility and an inability for women to leave their homes and seek out safe havens led to anticipation that crimes against women would rise rather than fall.
- Since there were restrictions on socialising in-person, and teaching shifted online, there was a corresponding rise in time spent by children online, making them vulnerable to online abuse and exploitation.

### **Functions and Responsibilities of the Union and the States, Issues and Challenges Pertaining to the Federal Structure**

#### **5. Reflections on the ‘quasi-federal’ democracy**

- » Mains: Challenges to federal structure in India with contemporary examples

#### **Introduction**

- India is a land of diversity, multi-cultural with myriad castes, tribes and religions.
- Many in the West believed India would be balkanized under the weight of its diversity, its sovereignty would be challenged.

\* Thanks to our revered freedom fighters and their contributions in drafting a constitution that is able to accommodate wide-ranging diversity within one sovereign state, with a formal democratic framework.

\* With universal adult suffrage and free institutions of justice and governance, it is nearly impossible to polarise its wide-ranging diversity within any single divisive identity.

- Yet, in India’s journey towards the 75th year since its independence, it is time to reflect on India’s federal structure where there are competing identities. So, the article discusses the existing concerns in Indian federalism and the need for change.

#### **Some fault lines**

1. RajyaSabha Chairman briefly broke down when some opposition members climbed on the reporters’ table.

- The Chairman was unable to conduct proceedings despite the use of marshals.
- However, the House passed a record number of bills amidst a record number of adjournments, pointing to rushed passing of bills without due deliberation.

2. Cross-border police firing by one constituent State against another

- Example: Assam-Mizoram clash
- Such events have led to increased violence and casualties on both sides, which has resulted in retaliatory action in the form of an embargo on goods trade and travel links.

3. According to K.C. Wheare, India is a “centralized state with some federal features” as “quasi-federal”.

- Quasi-federal refers to a system of government where the distribution of power between the centre and the state is not equal.
- The constitutional division of power and resources remains heavily skewed in favour of the Centre; along with “Residual”, “Concurrent” and “Implied” powers.
- Indian federalism, to be democratically federal, needs institutional amendment despite being a “basic structure”.

4. Principles of Democratic Federalism

- Institutions should ensure equality between federal units.
- The Centre should coordinate and respect the views of the States.
- The Centre is subordinate to the Constitution.
- Disputes between federal units should be adjudicated by an independent judiciary with impeccable professional and moral credibility.

- Concern

- \* India's federal structure is constitutionally hamstrung by deficits on all these counts, and operationally impaired by the institutional dents in the overall democratic process.
- \* Institutional preferences are based either on ethnic or kinship network, or anti-incumbency.
- \* Banking on individual role-models rather than actively participating in change: T.N. Seshan for the Election Commission of India, J.F. Ribeiro for the police or Justices Chandrachud or Nariman for the judiciary.

#### 5. State Territorial Boundaries

- The Government of India Act, 1935, introduced the element of federalism in view of the fact that India was a country of sub-continental size.
- It initiated 'provincial autonomy', attempted democratising it by: renaming "Provinces" to autonomous "States"; transferring all "Reserved Powers" to popular governance; constitutionally dividing powers between the two tiers; inserting federalism in the Preamble, and Parts 3 and 4 containing citizens' "Fundamental Rights" and "Directive Principles"; but nothing about States' rights, not even their territorial boundaries.
- This has enabled the Centre to unilaterally alter State boundaries and create new States.

#### 6. Judicial Appointments

- The judiciary is empowered to adjudicate on conflicts between the Centre and the States, but higher judicial appointments (an estimated 41% lying vacant), promotion and transfers becoming a central prerogative, their operations are becoming increasingly controversial.

#### 7. Role of RajyaSabha

- The RajyaSabha indirectly represents the States whose legislators elect it.
- Representatives elected should focus on issues of the States but emphasis is along political lines.
- Members failing to win on the popular vote in LokSabha elections have also sought the route of RajyaSabha indirectly.
- It is not empowered to neutralize the demographic weight of the populous States with larger representation in the popular chamber; it cannot veto its legislations, unlike the U.S. Senate.
- Joint sessions to resolve differences goes in favour of the LokSabha.

#### 8. Other issues

- Control over All India Services
- Appointment of Governors

#### Inference

- Thus, the critical instruments of national governance have been either assigned or appropriated by the Centre, with the States left with politically controversial subjects such as law and order and land reforms.
- Thus, most of India's federal conflicts are structural, reinforced by operational abuses.

#### Conclusion

- India's national security deserves a functional democratic federal alternative to its dysfunctional "quasi-federal" structure, which is neither federal nor democratic but a constitutional "basic structure".

#### **Important Terms**

##### Soft State

- The term 'soft state' was introduced by Gunnar Myrdal.
- The word "soft" refers to a general societal indiscipline prevalent in South Asia as well as much of the developing world in comparison to European countries. This gets reflected in our inability to adhere to standards, enforce the law and maintain discipline.
- Myrdal used the term to describe:
  - \* various types of social indiscipline which manifest themselves by deficiencies in legislation and, in particular, law observance and enforcement, a widespread disobedience by public officials and, often, their collusion with powerful persons and groups ... whose conduct they should regulate.
- Inference
  - \* At all levels, most of us exercise the soft option of doing what is popular rather than what is right.
  - \* These failures weaken institutions and lead to unacceptably high levels of corruption, which, in turn, adversely impact development.



### **Functioning anarchy**

- John Kenneth Galbraith, the US ambassador to India and a renowned economist, had called India a “functioning anarchy”, where the implication was that the country did well despite the government not doing much

### **Functions and Responsibilities of the Union and the States, Issues and Challenges Pertaining to the Federal Structure**

#### **6. Bengal can't bar CBI from probing crimes in State, Centre tells SC**

- » Prelims: CBI powers and jurisdiction; principle of general consent

##### **Context:**

- The Union Government has told the Supreme Court that the West Bengal State Government does not have any absolute power to keep the Central Bureau of Investigation (CBI) from investigating crimes inside the State.

##### **Details:**

- The Union Government, through the Department of Personnel and Training, was responding to a suit filed by the West Bengal Government against the Union of India under Article 131 of the Constitution.
- Article 131 gives the Supreme Court original jurisdiction (i.e., the Supreme Court can hear the case first-hand rather than reviewing a lower court's judgment) to mediate disputes between states or between the Centre and states.

##### **Issue:**

- West Bengal has challenged the CBI's jurisdiction to register FIRs and conduct investigations in the State in myriad cases.
- West Bengal said it had withdrawn “general consent” to the CBI way back in 2018.

##### **Union Government's Argument:**

- The Union Government has said that the withdrawal of general consent would not stand in the way of constitutional courts entrusting the CBI with the cases “where it is found that the State police would not effectively conduct a fair and impartial investigation”.
- Besides, it argues that the CBI is empowered to probe cases concerning any of the Central subjects enumerated in the Union List in the Seventh Schedule of the Constitution.

- It also argues that the alleged crimes under investigation were offences under parliamentary laws.

##### **What is General Consent?**

- In order to conduct an investigation in a state, the CBI must mandatorily have the consent of that state government.
- The general consent is routinely given by State governments for periods ranging from six months to a year to the CBI and all agencies under the Delhi Special Police Establishment (DSPE) Act, 1946.
- The consent is necessary as the jurisdiction of these agencies is confined to Delhi and Union Territories under this Act.
- There are two kinds of consent: case-specific and general. Given that the CBI has jurisdiction only over central government departments and employees, it can investigate a case involving state government employees or a violent crime in a given state only after that state government gives its consent.
- “General consent” is normally given to help the CBI seamlessly conduct its investigation into cases of corruption against central government employees in the concerned state. Almost all states have given such consent. Otherwise, the CBI would require consent in every case.
- Other states such as West Bengal, Andhra Pradesh, Rajasthan and Maharashtra have also withdrawn consent to the CBI to operate freely in their respective jurisdictions.

##### **Does withdrawal of General Consent mean that the CBI can no longer probe any case in the state?**

- Withdrawal of consent will only bar the CBI from registering a case within the jurisdiction of such states.
- The CBI would still have the power to investigate old cases registered when general consent existed.
- Also, cases registered anywhere else in the country, but involving people stationed in a state that has withdrawn general consent, would allow CBI's jurisdiction to extend to these states.
- There is ambiguity on whether the agency can carry out a search in either of the two states in connection with an old case without the consent of the state government.
- However, there are legal remedies to that as well. The CBI can always get a search warrant from a local court in the state and conduct searches.
- In case the search requires a surprise element, there is CrPC Section 166, which allows a police officer of one jurisdiction to ask an officer of another to carry out searches on his behalf.

- And if the first officer feels that the searches by the latter may lead to loss of evidence, the section allows the first officer to conduct searches himself after giving a notice to the latter.

# ECONOMY

## *Indian Economy and issues relating to Planning, Mobilization of Resources, Growth, Development and Employment/ Effects of Liberalization on the Economy*

### 1. Air India Disinvestment Deal

- » Prelims: Disinvestment and strategic disinvestment; Privatization
- » Mains: Reasons for the disinvestment of Air India and its significance; Associated concerns

#### Context:

- Recently, the government approved the highest price bid of Talace Pvt Ltd, a wholly owned subsidiary of Tata Sons Pvt. Ltd for sale (Disinvesting) of 100% equity shareholding of Government of India in Air India (AI).

#### Background:

##### **History of Air India:**

- Tata Airlines was started by the Tata Group in 1932. It became a public company in 1946 and was named as Air India Limited.
- In 1948 post India's independence, the government bought a 49% stake in AI. In 1953, the government bought the remaining stake, and AI was nationalised.

##### **Previous disinvestment attempts:**

- Owing to poor financial operations, Air India had accumulated huge debts over the years.
  - \* There was delay in decision making which acted as a major constraint on its efficient operations.

- \* The powerful workers union had caused major disruptions to the functioning of the company. The company was working with a larger workforce than required.
- \* The ill-timed merger with Indian Airlines led to huge losses
- \* AI had been competing with private sector airlines which were more efficient in terms of ticket pricing, decision making, choosing the right routes, providing value-added services, etc.
- \* The rising fuel costs had led to higher cost of operations which had eaten up the profit margins
- The Government had been considering disinvestment and subsequent privatization as a way out. Hence the disinvestment of Air India has been in the offing for a long time.
- The first attempt to reduce the government's stake through disinvestment was made in 2001 under the then NDA government. But that attempt to sell a 40% stake failed.
- As the viability of running AI worsened with every passing year, in 2018, the Narendra Modi government made another attempt to sell the government stake — this time, 76%. But it did not elicit even a single response.
  - \* The government's intention to retain a partial stake had raised concerns among prospective bidders if they would have the operational freedom needed to turn around such a loss-making airline. Also the large debt on AI's books and the ongoing losses had led to no interest from the bidders.

#### Timeline:

**1932:** JRD Tata pilots Tata Airlines' inaugural flight from Karachi to Bombay

**1946:** Tata Airlines becomes a public company; renamed Air India Limited

**1948:** Govt. of India acquires a 49% stake in the carrier

**1953:** Government nationalises Air India

**2007:** Air India merges with Indian Airlines, that operates only domestic routes

**2012:** Govt. approves ₹30,000 crore bailout for Air India, which has over ₹67,000 crore in debt

**May, 2018:** Govt. attempts to sell 76% stake in Air India; attracts no bidders

**Jan, 2020:** Govt. launches a second attempt, this time offers 100% stake in Air India

**Oct, 2020:** Govt. confirms Tata Sons' subsidiary Talace Pvt. Ltd. as the winning bidder



### **Disinvestment:**

- Disinvestment means sale or liquidation of assets by the government, usually Central and state public sector enterprises, projects, or other fixed assets.
- Unlike the simple disinvestment, strategic sale implies a kind of privatization. It involves the transfer of the ownership and control of a public sector entity. Strategic sale is the sale of a substantial portion of the Government shareholding of a central public sector enterprises (CPSE) of upto 50%, or such higher percentage as the competent authority may determine, along with transfer of management control.

### **Details of the deal:**

- The Tatas will own 100% stake in AI, as also 100% in its international low-cost arm Air India Express Ltd (AIXL) and 50% in the ground handling joint venture, Air India SATS Airport Services Pvt Ltd.
- Apart from 141 aircraft and access to a network of 173 destinations, including 55 international ones, Tatas will also have the ownership of iconic brands such as Air India, Indian Airlines and the Maharajah.
- Tatas' bid of Rs. 18,000 crore comprises taking over Rs 15,300 crore of debt and paying the rest in cash.
- The government will absorb the balance debt of Rs. 46,262 crore, which will be transferred to a special purpose vehicle (SPV) set up by Air India Assets Holding Limited. When adjusted against non-core assets such as land and buildings worth Rs. 14,718 crore that will also be parked in the SPV and the cash amount of Rs. 2,700 crore from Tatas, the net liability on the government comes to Rs. 28,844 crore.

### **Reasons for the disinvestment:**

- Government has had to bail out Air India multiple times. The repeated bailouts too were ineffective in turning around Air India's financial status. The disinvestment process had become inevitable to help save taxpayers money from paying for daily losses of AI.
- With economic liberalization and the growing presence of private players, the dominance of Air India came under serious threat in the aviation sector. The only way to keep it afloat in the long term would be through its privatization.
- There is a pressure on the government to raise resources to support the economic recovery and meet expectations of higher outlays for healthcare. One of the avenues for raising resources is through the disinvestment process. The government of India had set itself an ambitious disinvestment target of 1.75 Lakh Crore for the current fiscal. The disinvestment

process of Air India will help towards achieving this disinvestment target.

- Ideologically too, the government running an airline did not quite gel with the mantra of liberalization. The government through this disinvestment process sought to underscore its commitment to reducing the role of government in the economy.

\* Liberalization is guided by the basic economic principle that the government should not be in the business to engage itself in manufacturing/producing goods and services in sectors where competitive markets have already developed.

### **Significance of the disinvestment:**

- With privatization of Air India, its operations and costs will get streamlined, services on board could improve. Infusion of capital, technology up-gradation and efficient management practices etc. by the private owner could help realize the economic potential of Air India
- A strong international carrier in India will give a boost to the large airports built in Delhi, Hyderabad, Mumbai and Bengaluru which along with AI will be able to win back some of the tourist dollars from Indians travelling abroad who are currently travelling on foreign carriers.
  - \* International carriers like Emirates, Etihad, Qatar Airways, Singapore Airlines, Thai Airways and Cathay Pacific account for a large share of Indians travelling abroad.
  - \* Air India gets two-thirds of its income from its international routes and is the leading player from India in the international market. Therefore, the Tatas have a huge opportunity in the international markets and it could build on this in coming years.
- A successful turnaround of Air India could also help the Indian economy as it is a well-established fact that aviation has a multiplier effect on the economy.
- By privatization the government will be able to ensure taxpayers' money is deployed more meaningfully in social and strategic sectors rather than paying for daily losses of AI.
- Given the historical difficulties in AI's disinvestment, or any disinvestment at all this is a significant achievement. It will help push other tough decisions the government is keen on taking with respect to disinvestment in public sector entities. The privatisation of Air India is a message from the Government to the markets and global investors that it has the political will to undertake privatization. A transaction as "tough and complex" as Air India's in an open, transparent and competitive bidding process, will boost future privatisation.

### **Concerns:**

- The assets left with the government, such as buildings, etc., will likely generate Rs 14,718 crore. But that will still leave the government with a debt of Rs 28,844 crore to pay back.
- The job security of the more than 13,000 permanent and contractual staff at the airline and its unit will remain a concern despite the condition on Talace to ensure there should be no job cuts for at least one year.

### **Conclusion:**

- The sale of Air India can be seen as one of the biggest reforms in the aviation sector. However, there is a long way to go in rebuilding Air India that will require patient and very long-term capital.

## ***Indian Economy and Infrastructure- Initiatives in news***

### **2. PM GatiShakti**

- » Prelims: PM GatiShakti- provisions
- » Mains: Significance of the new initiative

### **Context:**

- Prime Minister recently inaugurated PM Gati Shakti National Master Plan

### **Background:**

- Infrastructure creation in India had suffered for decades from multiple issues.
- There was lack of coordination between different Departments, for example, once a road was constructed, other agencies dug up the constructed road again for activities like laying of underground cables, gas pipelines, etc. This not only caused great inconvenience but was also a wasteful expenditure.

### **Details:**

- PM GatiShakti is a national master plan for multimodal connectivity.
- PM GatiShakti will address the past issues through institutionalizing holistic planning for stakeholders for major infrastructure projects.
- Instead of planning & designing separately in silos, the projects will be designed and executed with a common vision.
- It will incorporate the infrastructure schemes of various Ministries and State Governments like Bharatmala, Sagarmala, inland waterways, dry/land ports, UDAN, etc.
- Economic Zones like textile clusters, pharmaceutical clusters, defence corridors, electronic parks, industrial corridors, fishing clusters, agri zones will be covered to improve connectivity & make Indian businesses more competitive.
- It will also leverage technology extensively

including spatial planning tools with ISRO imagery developed by BiSAG-N (Bhaskaracharya National Institute for Space Applications and Geoinformatics).

- PM GatiShakti will provide the public and business community information regarding the upcoming connectivity projects, other business hubs, industrial areas and surrounding environment.

### **Six pillars:**

- **Comprehensiveness:** It will include all the existing and planned initiatives of various Ministries and Departments with one centralized portal. Each and every Department will now have visibility of each other's activities providing critical data while planning & executing of projects in a comprehensive manner.
- **Prioritization:** Through this, different Departments will be able to prioritize their projects through cross-sectoral interactions.
- **Optimization:** The National Master Plan will assist different ministries in planning for projects after the identification of critical gaps. For the transportation of the goods from one place to another, the plan will help in selecting the most optimum route in terms of time and cost.
- **Synchronization:** Individual Ministries and Departments often work in silos with no coordination in the planning and implementation of the project resulting in delays. PM GatiShakti will help in synchronizing the activities of each department, as well as of different layers of governance, in a holistic manner by ensuring coordination of work between them.
- **Analytical:** The plan will provide the entire data at one place with GIS-based spatial planning and analytical tools having 200+ layers, enabling better visibility to the executing agency.
- **Dynamic:** All Ministries and Departments will now be able to visualize, review and monitor the progress of cross-sectoral projects, through the GIS platform, as the satellite imagery will give on-ground progress periodically and the progress of the projects will be updated on a regular basis on the portal. It will help in identifying the vital interventions for enhancing and updating the master plan.

### **Significance:**

- PM GatiShakti is the result of the government's endeavour to build Next Generation Infrastructure which improves Ease of Living as well as Ease of Doing Business.
- The multi-modal connectivity will provide integrated and seamless connectivity for the movement of people, goods and services from one mode of transport to another. It will facilitate



the last mile connectivity of infrastructure and also reduce travel time for people.

- GatiShakti will help increase the productivity of industry, enhance their competitiveness, support local manufacturers, and also help in developing new possibilities for new economic zones. It will also help to improve the global competitiveness of local products by cutting down the logistics costs and improving the supply chains.
- It is important to reduce logistics costs in India which is currently about 13% of GDP (which is quite high) causing decreased competitiveness of Indian exports in the global markets. By planning to close the gap between macro planning and micro implementation, Gati Shakti seeks to reduce the huge logistics costs.
- The plan will ensure quick completion of infrastructure works with cost-efficiency.
- The plan also envisages the creation of multiple employment opportunities.
- The Gati Shakti Master Plan will remove all the obstacles involved in the completion of a project and will improve the ease of doing business. This will increase the confidence of foreign investors and will attract more FDI to India.
- A well-developed infrastructure is considered one of the healthy signs of a developed country. To move from the status of a developing economy to a developed economy, India needs to strengthen its infrastructure. To reach the goal of becoming a 5 trillion economy, this project will help in developing world-class infrastructure for India.
- GatiShakti plan aims to achieve - synchronous decision making to create a world-class, seamless multi-modal transport network, on the back of which India will be transformed.

### Economic Data

#### **3. All-India Quarterly Establishment-based Employment Survey (AQEES)**

- It was launched with the objective of collecting employment data on a quarterly basis from all the establishments.
- It is designed to be an Establishment based Employment Survey that would provide estimates for the demand side conditions of the labour market.
- It updates about the employment and related variables of establishments, in both organised and unorganised segments of nine selected sectors.

\* The nine selected sectors are Manufacturing, Construction, Trade, Transport, Education, Health, Accommodation and Restaurant, IT/BPO and Financial Services.

\* These sectors account for 85% of the total employment in establishments employing 10 or more workers as per the Sixth Economic Census (EC), which serves as the basis of the QES survey.

- The AQEES has two parts, one is Quarterly Employment Survey (QES) and another is Area Frame Establishment Survey (AFES).

#### **Quarterly Employment Survey (QES)**

- It would provide the employment estimates for the establishments employing 10 or more workers.

#### **Area Frame Establishment Survey (AFES)**

- It has also been launched to cater to the need for data-driven labour welfare policy formulation, as a part of the AQEES, which would provide the employment estimates for the establishments recruiting 9 or fewer workers.

#### **Context**

- The Labour Bureau released the results of the All-India Quarterly Establishment-based Employment Survey (QES) for the first quarter (FQ) of 2021 (April to June).

### **Governmental Schemes/Programmes/Initiatives**

#### **4. Comprehensive Handicrafts Cluster Development Scheme (CHCDS)**

- » Prelims: Different forms of unemployment; Labour bureau

#### **Context:**

- Ministry of Textiles approves continuation of Comprehensive Handicrafts Cluster Development Scheme with a total outlay of Rs 160 crore.

#### **About the scheme:**

- CHCDS aims to create world-class infrastructure that caters to the business needs of the local artisans & SMEs to boost production and export.
- In brief, the main objective of setting up these clusters is to assist the artisans & entrepreneurs to set up world-class units with modern infrastructure, latest technology, and adequate training and human resource development inputs, coupled with market linkages and production diversification.

- Under CHCDS, soft interventions like Baseline Survey and Activity Mapping, Skill Training, Improved Tool Kits, Marketing events, Seminars, Publicity, Design workshops, Capacity Building, etc will be provided.
- Hard interventions like Common Facility Centers, Emporiums, Raw Material Banks, Trade Facilitation Centers, Common Production Centers, Design and Resource Centers will also be granted.
- The focus will be on integration of scattered artisans, building their grass root level enterprises and linking them to SMEs in the handicrafts sector to ensure economies of scale.
- The mega handicraft clusters having more than 10,000 artisans will be selected for overall development under this scheme.
- As per the latest decision, the scheme will continue up to March 2026.

### *Governmental Schemes/Programmes/initiatives*

#### **5. Credit Guarantee Scheme for Subordinate Debt**

- » Prelims: Credit Guarantee Scheme for Subordinate Debt

##### **Context:**

- Credit Guarantee Scheme for Subordinate Debt (CGSSD) extended up to 31.03.2022.

##### **About CGSSD:**

- The Credit Guarantee Scheme for Subordinate Debt was launched by the Government in June 2020 to provide credit facility through lending institutions to the promoters of stressed MSMEs viz. SMA-2 and NPA accounts who are eligible for restructuring as per RBI guidelines on the books of the lending institutions.
- The scheme was to remain open till end of March 2021 but the government had decided to extend it till September 2021. Now, it has been extended for six more months.
- Objectives of the scheme:
  - \* To provide guarantee coverage to scheduled commercial banks for providing personal loan through banks to the promoters of stressed MSMEs for infusion as equity/quasi-equity, sub-debt in the business eligible for restructuring as per RBI guidelines.
    - » 90% guarantee coverage from Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE).
    - » 10% from the promoter(s) concerned.
  - \* Credit facility is offered to the promoters of MSMEs up to 15% of the promoter's stake or Rs. 75 lakh or outstanding debt availed by the MSME unit, whichever is lower.

\* Note:- The Scheme is named as 'Distressed Assets Fund – Subordinate Debt for Stressed MSMEs' and the credit product for which guarantee would be provided under the Scheme shall be named as 'Credit Guarantee Scheme for Subordinate Debt (CGSSD)'.

\* Under the scheme, all Scheduled Commercial Banks are eligible as Member Lending Institutions (MLIs).

\* Scheme duration: The Scheme would be applicable to sub-debt sanctioned under CGSSD for a maximum period of 10 years from the guarantee availment date or March 31, 2021 whichever is earlier, or till an amount of Rs 20,000 crore of guarantee amount is approved.

### *Governmental schemes / Programmes / initiatives*

#### **6. Geospatial Energy Map of India**

- » Mains: Energy resources of India and their distribution

##### **Context:**

- NITI Aayog launched the Geospatial Energy Map of India

##### **Details:**

- NITI Aayog in collaboration with Indian Space Research Organisation (ISRO) has developed a comprehensive Geographic Information System (GIS) Energy Map of India with the support of Energy Ministries of Government of India.
- The GIS map provides a holistic picture of all energy resources of the country which enables visualisation of energy installations such as conventional power plants, oil and gas wells, petroleum refineries, coal fields and coal blocks, district-wise data on renewable energy power plants and renewable energy resource potential, etc. through 27 thematic layers.
- The map attempts to identify and locate all primary and secondary sources of energy and their transportation/transmission networks to provide a comprehensive view of energy production and distribution in the country.
- The GIS-based energy map of India may be useful for geospatial planning of resource.
- This may also help in resource and environmental conservation measures, inter-state coordination on infrastructure planning including different corridors of energy and road transport highway.
- It will also aid in disaster management and making investment decisions.

## Governmental schemes / Programmes / Initiatives

### **7. Krishi UDAN 2.0**

- » Prelims: Krishi UDAN scheme- features
- » Mains: Storage, Transport and Marketing of Agricultural Produce and Issues and Related Constraints

#### Context:

- Union Civil Aviation Minister released Krishi UDAN 2.0 to boost transport of agricultural products.

#### About Krishi UDAN 2.0:

- Krishi UDAN 2.0 lays out the vision of improving value realization through better integration and optimization of Agri-harvesting and air transportation and contributing to Agri-value chain sustainability and resilience under different and dynamic conditions.
- The scheme proposes to facilitate and incentivize movement of Agri-produce by air transportation.

#### Background:

- The KrishiUdan scheme, launched by the Centre in September 2020, waived airport charges such as parking charges and terminal navigational landing charges on select Indian airports for air cargo operators if the agricultural cargo is over 50 per cent of the total chargeable weight carried.
- The Centre, under KrishiUdan 2.0, has stated that full waiver of airport charges would be granted at select airports even if the agricultural cargo is less than 50 per cent of the total chargeable weight carried.

#### Features:

- The enhanced version of the Krishi UDAN scheme was formulated with support from AAICLAS – a 100% subsidiary of the Airports Authority of India and Invest India, India's national Investment Promotion & Facilitation Agency, under the Ministry of Commerce and Industry.
- The scheme will be implemented at 53 airports across the country. The pilot will run for six months and based on the evaluation, amendments will be made to the programme.
- The scheme will facilitate the development of hub and spoke model in India and create cargo terminals at the airports in a phase-wise manner.
- Under the scheme, the government would also encourage states to reduce sales tax to one per cent on aviation turbine fuel that is used in freighter aircraft and passenger aircraft that are being used to just transport cargo.
- Various government departments and regulatory bodies, under the newly launched scheme, will collaborate with the civil aviation ministry to provide freight forwarders, airlines and other stakeholders with incentives and concessions to carry more agriculture products.

- Additionally, an online platform called e-Kushal would be developed to facilitate information dissemination to all stakeholders regarding transportation of agriculture produce.

## Governmental schemes/Programmes/Initiatives

### **8. Mahatma Gandhi National Fellowship (MGNF)**

- » Prelims: SANKALP And STRIVE scheme
- It is a two-year fellowship programme to boost skill development at the district level
- The MGNF program under SANKALP was designed to provide a cadre of professionals at the District level who not only know about governance and public policy in general but vocational education too.
  - \* Skills Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP)
  - \* It is a programme of the Ministry of Skill Development with loan assistance from the World Bank.
  - \* It aims to improve short term skill training qualitatively and quantitatively through strengthening institutions, bring in better market connectivity and inclusion of marginalised sections of the society.
- The MGNF programme has an in-built component of on-ground practical experience with the district administration

#### Eligibility

- Eligible fellows for the programme have to be in 21-30 years age-group
- They should have a graduation degree from a recognized university and be citizens of India.
- Proficiency in official language of state of fieldwork will be mandatory.

#### Implementation

- In the course of their training, fellows will work under the close supervision of state skill development missions (SSDM) and will spend time and effort in understanding skilling challenges and gaps in the district.
- They are expected to enrich skilling programmes by bringing in fresh thinking to local planning, execution, community interaction and outcome management.
- Fellows will receive a stipend of Rs. 50,000 in the first year and Rs. 60,000 in the second year.
- On completion of their engagement, they will be awarded a Certificate in Public Policy and Management from IIM Bangalore.

## ***Agriculture Related Developments***

### **9. Mastitis**

- » Prelims: Mastitis

#### **Context:**

- Indigenous knowledge shared by Gujarat-based farmer can combat Mastitis, an ailment of dairy cattle.

#### **Details:**

- Utilising indigenous knowledge system shared by a farmer from Gujarat, a poly-herbal and cost-effective medicine has been developed to treat Mastitis.
- The medicine called Mastirak Gel, developed by National Innovation Foundation (NIF) has been commercialized through an industry partner.

#### **What is mastitis?**

- Mastitis is a common infectious disease, which affects farm productivity due to fall in milk quality, thus impacting income-generating activities.
- Bovine mastitis is a condition typified by the persistent and inflammatory reaction of the udder tissue due to either physical trauma or infections caused by microorganisms.
- It is a potentially fatal mammary gland infection that is most common in dairy cattle worldwide.
- It is a disease that is known to cause the greatest loss to the dairy industry.
- Mastitis is caused by microorganisms ranging from virus, mycoplasma, fungus and bacteria. Physical injury to the mammary region, poor hygiene and/or trauma, also cause this condition.

## ***Geographical Indication Tag***

### **10. Mihidana**

- » Prelims: Mihidana
- Sweet dish Mihidana sourced from Bardhaman, West Bengal had received the GI Tag in 2017.
  - \* It is derived from two words, Mihi meaning fine, and Dana, meaning grain.
- Sitabhog is another sweet dish from Bardhaman that has got the GI Tag.
- It is said Mihidana was served to Viceroy Lord Curzon in August 1904 when he went to meet the Maharaja of Burdwan, Vijaychandra Mahatab. After tasting the sweet, Curzon apparently heaped praise on its creator

#### **Context:**

- First consignment of GI tagged sweet dish Mihidana from West Bengal exported to Bahrain.

## ***Governmental schemes/Programmes/initiatives***

### **11. Nutrient Based Subsidy Scheme**

- » Prelims: Nutrient based subsidy scheme-provisions
- » Mains: significance and relevance

Nutrient Based Subsidy (NBS) Programme for Fertilizers was initiated in the year 2010.

- Under the scheme, a fixed amount of subsidy decided on an annual basis is provided on each grade of subsidized Phosphatic and Potassic (P&K) fertilizers, except for Urea, based on the nutrient content present in them.
- The scheme is administered by the Department of Fertilizers under the Ministry of Chemicals & Fertilizers.

The aims of the NBS scheme are the following:

- The scheme aims at ensuring that a sufficient quantity of P&K is at the farmer's disposal at statutory controlled prices so that agricultural growth can be sustained and balanced nutrient application to the soil can be ensured.
- It aims at ensuring the balanced use of fertilizers, improving agricultural productivity, promoting the growth of the indigenous fertilizer industry, and also reducing the burden of subsidy.

#### **Context:**

- The Nutrient Based Subsidy (NBS) rates for Phosphatic & Potassic (P&K) Fertilisers for the year 2021-22 have been approved.

#### **Details:**

- The Department of Fertilisers had proposed the NBS rates for the year and they have been approved by the Cabinet Committee on Economic Affairs (CCEA).
- The CCEA also approved the inclusion of Potash derived from Molasses (0:0:14.5:0) under the NBS Scheme.

#### **Benefits:**

- This will enable smooth availability of all P&K fertilizers to the farmers during Rabi Season 2021-22 at the subsidized/affordable prices and support the agricultural sector by continuing the present subsidy levels and giving special packages of additional subsidy for Di-Ammonium Phosphate (DAP) and three mostly consumed NPK grades.

## ***Governmental schemes / Programmes / Initiatives***

### **12. PM MITRA**

- » Prelims: PM MITRA scheme- provisions
- » Mains: Significance and potential of textile sector in India



### Context:

- The Union Cabinet has approved the setting up of seven Mega Integrated Textile Region and Apparel (PM MITRA) Parks.

### Details:

- The government aims to develop the PM MITRA Parks to create an integrated textiles value chain right from spinning to processing, and printing to garment manufacturing at one location and boost FDI and local investment in the textiles sector.
  - \* The PM MITRA Parks are being set up at an outlay of ₹4,445 crore.
  - \* The mega parks scheme will include brownfield and Greenfield projects, spread over five years.
- The parks would be developed by a Special Purpose Vehicle (SPV) owned by the Central and State governments and would get two kinds of support.
  - \* Development Capital Support, aimed at helping develop infrastructure, would fund 30% of the project cost with a cap of ₹500 crore for Greenfield projects and ₹200 crore for brownfield projects.
  - \* A separate Competitiveness Incentive Support would be limited to ₹300 crore per park.
- Under PM MITRA, 50 per cent area will be developed for pure manufacturing activity, 20 per cent area for utilities, and 10 per cent of the area for commercial development.
- States offering the cheapest land (contiguous and encumbrance-free land of minimum 1,000 acres) and facilities such as adequate electricity and water would be selected through a transparent challenge route.
- The SPV would select a Master Developer to set up and maintain the park for a specified period. Of the park's area, 50% would be earmarked for manufacturing activity, 20% for utilities, and 10% set aside for commercial development.
- Industries in the parks would comprise four categories — units investing ₹300 crore or more, units investing ₹100-300 crore, investors of less than ₹100 crore and tenant units.

### Governmental schemes / Programmes / initiatives

#### **13. Palk Bay scheme**

- » Prelims: Palk Bay strait
- » Mains: Issues and governmental initiatives

### Context:

- The Union Government is considering increasing the unit cost of deep-sea fishing vessels under the Palk Bay scheme to make it more attractive to fisherfolk.

### Palk Bay Scheme:

- The scheme was launched in 2017.
- The project aims to replace all trawler boats and introduce over 2,000 deep sea fishing boats for the fishermen in Tamil Nadu.
- It aimed at shifting the fishermen away from bottom trawling.
  - \* Bottom trawling, an ecologically destructive practice, involves trawlers dragging weighted nets along the sea-floor, causing great depletion of aquatic resources.

### Funding

- The scheme, under the aegis of Blue Revolution scheme - is funded by the Centre - 50 per cent and state government - 20 per cent for a boat costing Rs 80 lakh.
- Of the balance 30 per cent, 10 per cent is contributed by the beneficiary (fisherman), and the remaining 20 per cent is funded by banks.

### Significance

- The project helps fishermen in the Palk Straits, who are not exposed to deep-sea fishing, to venture deep into the Indian Ocean, Arabian sea and other deep sea areas to look for fish like tuna that are in high demand.
- It will also to bring an end to issues between Sri Lanka and India as such disputes arise mostly in the Palk Straits region.

### Governmental schemes / Programmes / initiatives

#### **14. One District One Product Concept**

- » Prelims: One District, One Product (ODOP) Initiative
- » Mains: Initiatives to promote exports from India and its significance in India's economic growth and development
- The objective of the concept is to convert each district of the country into an export hub by:
  - \* Identifying products with export potential in the district
  - \* Addressing bottlenecks for exporting these products
  - \* Supporting local exporters, manufacturers to scale up manufacturing, and find potential buyers outside India.



- The aim is to promote exports, promote the manufacturing & services industry in the district and generate employment in the district.
- Towards this end, District Export Promotion Committees (DEPCs) are being set up in each district.
  - \* These committees are likely to be headed by the DM/Collector/DC/District Development Officer of the District and co-chaired by the designated Regional Authority of the Directorate General of Foreign Trade (DGFT).
  - \* The primary function of the DEPC will be to prepare and act on district-specific Export Action Plans in collaboration with all the relevant stakeholders from the Centre, State and the District levels.

#### Context:

- 2,000 kg of Kashmiri walnuts from Budgam was despatched to Bengaluru, Karnataka under the One District, One Product (ODOP) Initiative of the Ministry of Commerce & Industry.

#### About Kashmiri walnuts:

- Kashmir accounts for 90% of India's walnut production.
- With their superior quality and taste, the Kashmiri walnuts are a great source of nutrients and hence widely in demand across the globe.
- There is immense potential for this product to make its place in the local and global markets.

### Governmental Schemes//Programmes//Initiatives

#### **15. VAHAN Portal**

- » Prelims: VAHAN portal
- VAHAN is the name of the national vehicle registry, which intends to collate all the information available with road transport authorities for easy access by both citizens and regulators.
- VAHAN is a highly flexible and comprehensive system that takes care of all the burdensome activities of Vehicle Registration, thus letting the Transport Department deal with more important business issues.
- The software enables the processes at RTO/DTO/MLO/SDM involving Vehicle Registration, Fitness, Taxes, Permits & Enforcement to get computerized.
- With Vahan, multiple visits to the RTO, extensive paperwork, queues, middlemen and bribes will be eliminated.
- Vahan helps carry out most of the RTO related transactions including payments, online.
- Vahan allows access to all details related to vehicles such as registration number, chassis/

engine number, body/fuel type, colour, manufacturer and model and provides various online services to citizens.

- Driving Licence and related data are automated through a separate application called 'Sarathi'.

### Governmental Schemes//Programmes//Initiatives

#### **16. Good Samaritans**

- » Prelims: Brasilia declaration
- » Mains: Road accidents in India- Causes and concerns; Governmental initiatives

#### Context:

- The Ministry of Road Transport and Highways (MoRTH) has come up with a new scheme to award Good Samaritans who save the lives of road accident victims with a cash prize.

#### Stats

- According to a study conducted by the Ministry of Road Transport and Highways, 1,51,113 persons were killed and 4,51,361 injured in road accidents across the country in 2019.
  - \* NHs and State Highways, which account for about 5% of the total road length, claimed 61% of the deaths related to accidents.
  - \* Around 35,606 deaths were reported on the NHs, which come under the National Highway Authority of India (NHAI).
- In 2020, the National Crime Records Bureau data show 1,33,715 lives were lost in 1,20,716 cases attributed to negligence relating to road accidents.

#### Who is a Good Samaritan?

- According to MoRTH, a Good Samaritan is a person who, in good faith, without expectation of payment or reward and without any duty of care or special relationship, voluntarily comes forward to administer immediate assistance or emergency care to a person injured in an accident, or crash, or emergency medical condition, or emergency situation.

#### Why did the Govt come up with such a scheme?

- A chapter was added in 2020 in the Motor Vehicles Act which discussed in detail Good Samaritans and their role in society.
- People however were not able to accept this in spite of assurance from the government that there would be no harassment and legal complications.
- Therefore, the Ministry's move seeks to overcome restraint by rewarding socially-minded individuals who offer immediate assistance and rush a victim with certain kinds of injuries to the hospital, with ₹5,000 and a certificate of recognition for saving a life.

### How does the new scheme work?

- Any individual who has saved the life of a victim of a serious accident involving a motor vehicle by administering immediate assistance and rushing to the hospital within the Golden Hour of the accident to provide medical treatment would be eligible for the award.
  - \* The individual can be awarded a maximum of five times a year.
  - \* The amount of award for the Good Samaritan(s) would be ₹5,000 per incident.
- On receipt of communication from the Police Station/Hospital, District Level Appraisal Committee shall review and approve the proposals on a monthly basis.
  - \* The Appraisal Committee at the District Level comprising District Magistrate, SSP, Chief Medical and Health Officer, RTO (Transport Department) of the concerned District would sanction and send the cases to the concerned State/UT Transport Department for making the payment to the Good Samaritans.
- State governments are responsible for the plan, with the Centre providing an initial grant, but the Union Transport Ministry will give its own award of ₹1 lakh each to the 10 best Good Samaritans in a year.

### Similar initiatives

- This is not the first time that such schemes have been announced. The Puducherry Government announced an almost identical scheme in 2019, and that was a possible first in the country.

### Concerns

- The Centre has notified the National Road Safety Board, with a mandate to formulate standards on, among other things, safety and trauma management, to build capacity among traffic police, and put crash investigation on a scientific footing.
- Yet, the implementation is not according to the expectation primarily because:
  - \* State police forces generally appear to favour a populist approach of least engagement.
  - \* Bureaucracies at the regional level engage in corruption.

### Way forward

- Road accidents can be reduced by beginning with scientific road design and standards, and zero-tolerance enforcement.
- The Good Samaritan plan can work well if District Committees tasked with awarding these individuals readily recognise their contribution, aided by the police, hospitals and RTOs.

### Road accidents can be reduced

#### Brasilia Declaration

- It lays down recommendations on strengthening existing legislations, adopting sustainable transport and strengthening the post-crash response.
- The declaration promotes sustainable commuting ways and prioritises pedestrians, cyclists and motorists.
- India is a signatory to the declaration.

#### Motor Vehicles (Amendment) Act, 2019

- The govt introduced this act with the intention of bringing down the death rate due to road accidents by 50% by 2020.

#### Traffic fines

- The Govt introduced a hike in fines for traffic violations in the Act which was resisted by the opposition and State Governments.
  - \* West Bengal decided not to implement the new law and continued with the West Bengal Motor Vehicle Rules, 1989.

#### Madras High Court on over-speeding

- The Madras High Court struck down the April 6, 2018 notification of the Union Government wherein the speed limit was hiked to 120 and 100 km/hour on expressways and highways, respectively.
- This was done as 66.7% of accidents was attributed to overspeeding in 2017, 55.73% in 2018 and 64.4% in 2019.

#### Causes of road accidents

The large and rising number of road accidents in India is cause for grave concern.

- Negligent driving is reported to be responsible for most road accidents.
  - \* Speeding, overtaking from the wrong side and ignoring traffic signals cause many accidents.
- Under-age driving is rampant. It is well known that bribes rather than driving expertise determines whether or not a person gets a licence.
- Faulty road design and engineering flaws. Multiple accidents happen at certain points along roads.
  - \* Hedges along the road have obstructed the visibility of drivers coming from the other direction.
- Another important killer on roads is potholes. Although several accidents, especially those involving two-wheelers are caused by potholes, authorities are rarely willing to admit that it was the pothole that caused the driver to lose control over the vehicle.

### Way forward

- Strict enforcement of traffic safety laws.
- Educating citizens about the impact of accidents on the kin of the victims through public discourse could help in reducing accidents.
- Improving road infrastructure with coordinated efforts by the police and civic authorities, identification of black spots that are prone to accidents and deploying an adequate number of police personnel, particularly during peak hours, could bring down accident rates.
- Highway patrols with police personnel trained in first aid and ambulances every 10 km could also help save precious lives.

### International trade and commerce

#### **17. Trade multilateralism at risk**

- » Prelims: World Trade Organization- functioning
- » Mains: Challenges in the functioning of WTO

#### Context:

- The article discusses the challenges faced by the World Trade Organization (WTO).

#### Background

- The WTO was created in 1995.
  - \* It deals with the rules of trade between countries marking the biggest reform of international trade
  - \* It provides a forum for its members to negotiate on trade issues. It operates a body of rules in the form of the WTO agreements.
  - \* Finally, it provides a Dispute Settlement Mechanism (DSM) to resolve disagreements over the rules between members.

#### Appellate Body (AB):

- It is a standing body of seven persons that hears appeals from reports issued by panels in disputes brought by WTO Members.
- The Appellate Body can uphold, modify or reverse the legal findings and conclusions of a panel, and Appellate Body Reports are adopted by the Dispute Settlement Body (DSB) unless all members decide not to do so.
- The Appellate Body has its seat in Geneva, Switzerland.

#### Issue Area

- The establishment of WTO was a push by the USA to further its economic agenda. However, from the past few years, the United States seems to have lost interest in it as it feels the WTO hasn't served the American national interest.

- This is largely because the USA was not able to contain the rise of China and in several trade-related disputes China has had the upper hand.

#### Impact

- Since December 2019, the AB has stopped functioning due to rising vacancies.
  - \* United States' blocking of new appointments to the WTO's Appellate Body (AB) has paralyzed the entire mechanism for resolving trade disputes between countries.
- The U.S. also vetoes proposals to find solutions to this impasse, including stalling the proposal of the European Union to establish an alternative interim appellate arbitration mechanism.
- Pending appeals to the Appellate Body has subsequently increased to around 20 cases, giving an option to countries who don't want to comply with the WTO panel decisions to appeal against the decision making the ultimate process a mockery.

#### Other challenges

1. First, no solution has been found to the public stockholding for food security purposes despite a clear mandate to do so in the 2015 Nairobi ministerial meeting.

- India offers its farmers Minimum Support Price (MSP).
- The WTO rules allow countries to procure, stock and distribute food. However, if such procurement is done at an administered price such as the MSP that is higher than the external reference price, then the budgetary support provided shall be considered trade-distorting and is subject to an overall cap.
- With rising prices and the need to do higher procurement to support farmers and provide food to the poor at subsidised prices, India might breach the cap.
- Although countries have agreed that legal suits will not be brought if countries breach the cap, it is imperative to find a permanent solution such as not counting MSP-provided budgetary support as trade-distorting.

2. Second, India and South Africa had proposed a TRIPS waiver to overcome intellectual property (IP)-related obstacles in increasing accessibility of COVID-19 medical products, including vaccines.

- The WTO member countries continue to disagree on the need of waiving the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement for COVID-19 related medical products.
- Recommendation
  - \* The WTO needs to adopt a waiver in the upcoming ministerial meeting.

3. Third, the WTO is close to signing a deal on regulating irrational subsidies provided for fishing that has led to the overexploitation of marine resources by countries like China, which is the largest catcher and exporter of fish.

Fisheries are a key source of protein and livelihood for millions in coastal communities.

- Fishing subsidies directly contribute to overfishing.
- These subsidies effectively mean that taxpayers are paying industrial boats to degrade the environment and to destroy the food security and livelihood of vulnerable coastal communities.
- By fueling unfair competition between large fleets and individual artisanal fishermen, they are also fostering inequality.

• However, this agreement should strike a balance between conserving ocean resources and the livelihood concerns of millions of marginal fishermen.

• Recommendation

- \* An effective special and differential treatment provision that accords adequate policy space is what India and other developing countries should insist on.

4. Fourth, concerns about WTO has led to the emergence of mega plurilateral trade agreements.

- Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) — a treaty between 11 countries.
- Regional Comprehensive Economic Partnership (RCEP) agreement between Asian economies and countries down under.
- These agreements have a divided approach which not only fragments the global governance on international trade but also pushes the multilateral order to the margin, converting the WTO to what some call an “institutional zombie”.

### Way forward

- Notwithstanding its flaws, the WTO is the only forum where developing countries like India, not a party to any mega plurilateral trade agreements, can push for evolving an inclusive global trading order that responds to the systemic imbalances of extant globalisation.
- A rules-based global order has to be established as requested by Prime Minister Narendra Modi, during his recent U.S. visit.

### Conclusion

- The upcoming WTO ministerial meeting in Geneva provides an opportunity to rescue this critical global institution from irrelevance.

### Indian Agricultural Sector

#### **18. Seeding a data revolution in Indian agriculture**

- » Prelims: IDEA- India Digital Ecosystem of Agriculture
- » Mains: Potential, significance and challenges

#### Context:

- In June 2021, two significant documents relating to the Indian agriculture sector were released. Consultation papers on:

1. The India Digital Ecosystem of Agriculture (IDEA) from the Ministry of Agriculture and Farmers' Welfare (MoA&FW)

2. Indian Agriculture: Ripe for Disruption from a private organisation, Bain and Company.

#### Details:

- The first paper talks about a digital revolution in the agriculture sector and later predicts a revolutionary investment growth in agri-logistics, offtake, and agri-input delivery by 2025.
- Data is vital to every segment in current times.
- The MoA&FW report describes creating data to fuel the growth.

#### The forecast:

- The Bain report is a data-based prediction on agri-business scenarios.
- It has predicted the future of agri-business in another 20 years.
- The report has a ‘today forward– future back approach’ and predicts a drastic investment opportunity development by 2025.
- It includes targeting the production of alternative proteins, and food cell-based food/ingredients and initiating ocean farming, etc.
- The agriculture sector (currently worth \$370 billion), is estimated to receive an additional \$35 billion investment.
- The two enabling conditions for such investment opportunities are:
  - \* The changes in the regulatory framework, especially recent changes in the Farm Acts
  - \* Digital disruption.
- The report has demonstrated the business opportunity available in supply chains between farm to Agricultural Produce Market Committee (APMC) mandi and mandi to the customer, which can be realised with the support of digital disruption and the latest agriculture reforms.



- The report depicts agriculture reforms announced by the union government as a game-changer in the agriculture sector.
- The report argues that benefiting from the huge investments into the agri-ecosystem, doubling farmers' income targets can be achieved in near future.
- The IDEA-consulting paper is based on the Task Force and Working Group report constituted by the MoA&FW to design the blueprint of "digital agriculture".
- The IDEA concept profounds the creation of second enabling conditions. The IDEA principles explicitly talk about openness of data, which means open to businesses and farmers, indicating the kind of integration it aims at.
- Value-added innovative services by agri-tech industries and start-ups are an integral part of the IDEA architecture.
- The Indian agriculture sector in future will encompass farm to table and pave the way for a single national market with a national platform with better connection between producer and consumers.

#### **Concerns:**

- The IT industry has opposition to IDEA mainly due to the ethics of creating a Unique Farmer ID based on one's Aadhaar number and also the potential for data misuse.
- While the report focuses on widespread food production in controlled environments, emission, energy, and other resource footprints and sustainability issues around these techniques needed to confirm the projected trajectory are not included in the report.
- A majority of small and marginal farmers are not technology-savvy.
- Politically, these two reports ignore the protest of farmers against the reforms without considering it as a barrier or risk factor resulting in a repealing of these new farm laws.

#### **Conclusion:**

- While it is undeniable that a data revolution is inevitable in the agriculture sector, given its socio-political complexities, just technology fixes and agri-business investments cannot improve farmers' livelihoods.
- There need to be immense efforts to improve the capacities of the farmers in India.
  - \* At least until the educated young farmers replace the existing under-educated small and medium farmers.

- This capacity building can be done through:
  - \* Building the capacities of individual farmers
  - \* Coping with the new situation by establishing support systems
  - \* Through FPOs and other farmers' associations where technical support is available for farmers.
- Considering the size of the agriculture sector of the country it is not going to be an easy task and would need a separate programme across the country with considerable investment.

### ***Services Sector in India-tourism***

#### **19. Boost tourism through disruption**

- » Prelims: Travel and Tourism Competitiveness Report
- » Mains: Significance of the tourism sector in Indian economy; challenges faced by it; Governmental measures and future recommendations

#### **Background:**

- Given their contact intensive nature, the Indian tourism and hospitality sector was adversely affected by the COVID-19 pandemic and it experienced substantial job loss. In this context, the article discusses the measures required to revive the sector.

#### **India's performance in the sector:**

- India has improved its competitiveness in travel and tourism. India has improved its ranking in the Travel and Tourism Competitiveness Report from 65 in 2013 to 34 in 2019.
- Despite being home to diverse natural landscapes as well as a rich cultural heritage, India has not been able to use this to its advantage. The international arrivals have remained comparatively low in India, at around 9 to 10 million.

#### **Significance of the sector:**

- The tourism and hospitality sector has huge potential in India.
  - \* The employment generation capacity of the sector is much higher compared to the agricultural or manufacturing sector i.e; it can generate a large number of jobs for a given investment.
  - \* The growth in this sector has multiplier effects on income generation as it is employment-intensive. This could help achieve the elusive "inclusive growth" ideal in India.
  - \* The tourism sector, unlike many other sectors, can grow with smaller capital investments and that too without any industrial gestation period. This becomes all the more important for a developing



economy like India which is perennially faced with the challenge of resource mobilization for its economic growth and development

#### **Measures already taken by the government:**

- In the pre-pandemic period, many initiatives were adopted to promote the tourism sector, such as providing e-visas under various categories for people from particular countries, Global Media Campaigns and the ParyatanParv celebration.
- In the post-pandemic phase, the Government of India has announced financial support for more than 11,000 registered tourist guides/travel and tourism stakeholders. It has also announced the issuance of five lakh free tourist visas once international travel resumes.

#### **Recommendations:**

- While welcoming the initiatives being taken by the government, the article argues for long-term measures to tap the potential of the tourism and hospitality sector in India. In this direction, it makes the following recommendations.

#### **Skilling the workforce:**

- There is a need to train the workforce in India so that workers can develop the skills to perform jobs in the travel and tourism sector.

#### **Public-private partnership:**

- There is a need to push for public-private partnerships to tackle the challenges in the tourism sector of India.
- Travel and tourism startups should be encouraged with active support from the government for ideation and access to finance.

#### **Use of technology:**

- Frontier technologies like blockchain technology should be harnessed for use in the sector.
  - \* Blockchain ledger coupled with IOT devices for healthcare could have a positive impact on medical tourism.
  - \* Blockchain-based money solutions could help kick-start local tourism industries.

#### **Conclusion:**

- India needs a comprehensive disruptive innovation strategy to tap the potential of the tourism and hospitality sector to create employment opportunities and create avenues for economic growth.

#### **Miscellaneous**

### **20. A portrait of the Nobel masters of 'metrics'**

- » Prelims: Nobel Prize for economics, 2021

#### **Context:**

- David Card, Joshua Angrist and Guido Imbens have been awarded the Nobel Prize for economics for their research about the use of "natural experiments" on the impact of minimum wage, immigration and education on labour markets.
  - \* David Card was awarded one half of the prize, while the other half was shared by Joshua Angrist and Guido Imbens.
  - \* This is the first time the economic prize has been divided in this fashion with one half going to one awardee and the other half divided across two awardees.

#### **Background**

- Economists are often interested in causal questions such as the impact of education on incomes, the impact of COVID-19 on poverty and so on.
- They are also interested in understanding the direction of causality. Does education impact income or is the causality in reverse with income levels impacting education?
- Economists have used two kinds of experiments to study this causality and direction of causality questions: random experiments and natural experiments.

#### **Randomized Experiments**

- Under randomized experiments, the researchers allocate say medicines to a treatment group and compare the effect of the medicine with the control group which is not given the medicine.
- In 2019, the Nobel Committee gave awards to three scholars for their contribution to the field of randomized experiments. However, one cannot randomize experiments to study issues such as why certain people and regions are more unequal or have fewer educational opportunities and so on.

#### **Natural experiments**

- In natural experiments, economists study a policy change or a historical event and try to determine the cause and effect relationship to explain these developments.
- A natural experiment thus is an empirical or observational study in which the variables of interest are not artificially manipulated by researchers but instead are allowed to be influenced by nature.
  - \* Natural experiments use real-life situations to study impacts on the world as economists cannot conduct clinical trials like in medicine.

Natural experiments are more difficult for two reasons.

1. The first is to identify what will serve as a natural experiment.
2. Second, in a random experiment, the researcher knows and controls the treatment and control groups which allows them to study the cause and effect of the medicine.
  - But in natural experiments, such clear differentiation is not possible because people choose their groups on their own and even move between the two groups.

### On Minimum Wages

- Economists around the world believed that raising the minimum wage will lead to greater unemployment.
- The argument is that higher wages will increase costs for the firms and lead to employers recruiting fewer people.

### Survey

- In 1992, New Jersey increased its minimum wage while neighbouring Pennsylvania did not.
  - \* The hourly minimum wage in New Jersey was increased from \$4.25 to \$5.05.
- A survey on either side of the New Jersey-Pennsylvania border established that the higher wages had no impact on employment!

### Inference

- It is widely believed that minimum wages may not affect employment since firms may pass on the costs to consumers.

### Card's research on immigration and education

- Card studied the effect of immigration and education on the labour market. In 1980, 1,25,000 Cubans emigrated to the US, with most of them settling in Miami.
- There was a seven per cent increase in the Miami labour force due to the influx.
- Card analysed this natural experiment and observed that low levels of education had no negative impact on the labour force.

### Angrist and Guido Imbens' work on LATE

- In the mid-1990s, Angrist and Guido Imbens tried to establish a cause and effect relationship between education and income.
- Causality or causation refers to the relationship between cause and effect.

### How does it work?

- They considered a natural experiment where some people are offered a computing course (treatment group) while other people are not (control group).

- \* In both groups, there were people who were interested in the course, while others were uninterested.

### Inference

- They concluded that the cause and effect relationship could be established only for those participants who opted for the course, as they changed their behaviour.
- Also, a cause and effect relationship between an additional year of education and income was applicable only for those people who decided to leave school when they are given a chance.
- The effect on such a group, where researchers do not know who the participants are, but only the size, is called Local Average Treatment Effect (LATE).

### Significance

- Such research made economics more applicable to everyday life, provided policymakers with actual evidence on the outcomes of policies.

### Conclusion

- In this way, Angrist and Imbens' methodological insights about natural experiments, and Card's use of natural experiments to understand labour economics have proved to be extremely beneficial in the field of economic sciences.

## Agricultural Production

### 21. Sowing better to eat better

- » Prelims: FAO
- » Mains: Relation between agricultural production and nutritional security of India- Challenges and recommendations

### Context

- Nutritional indicators of many states have worsened as depicted by the first round of the Fifth National Family Health Survey. The survey had covered 17 States and five Union Territories.
- Findings from the Comprehensive National Nutrition Survey (2016-18) have also painted a grim picture about the role of micronutrient malnutrition.

### A look at numbers

The agro-food system comprises all those activities related to the production, processing, distribution, sale, preparation and consumption of food.

- India produces sufficient food, feed and fibre to sustain about 18% of the world's population (as of 2020).
- Agriculture contributes about 16.5% to India's GDP and employs 42.3% of the workforce (2019-20).

### Challenges to agri-food systems

- Reduction of agricultural lands as it is being diverted to commercial activities.
- Agriculture is prone to disasters and extreme events.

### A multi-pronged approach is needed to tackle malnutrition

- The agri-food systems need to be reoriented to minimise costs on the environment and the climate.
- It should aim to improve dietary diversity, reduce post-harvest losses, make safety net programmes more nutrition-sensitive, support women's empowerment, enforce standards and regulations, improve Water, Sanitation and Hygiene, nutrition education, and promote effective use of digital technology.

### **Food and Agriculture Organization (FAO)**

- FAO has been engaged with the Indian government for mainstreaming agrobiodiversity, greening agriculture, promoting nutrition-sensitive agriculture and strengthening national food security.
- Its principle is based on agro-ecology where the farming practices help in mitigating climate change, reduce emissions, recycle resources and prioritize local supply chains.
- It emphasizes diversity in agriculture to adapt to shocks.
  - \* Different combinations of integrated crop-livestock-forestry-fishery systems can help farmers produce a variety of products in the same area, at the same time or in rotation.

### Conclusion

- Therefore, a sustainable agri-food system is one in which a variety of sufficient, nutritious and safe foods are made available at an affordable price to everyone, and nobody goes hungry or suffers from any form of malnutrition.
- Sustainable agri-food systems can deliver food security and nutrition for all, without compromising the economic, social and environmental bases.

### Indian Economy and issues relating to growth and development-Power sector

## **22. What is the extent of India's coal crisis?**

- » Prelims: India's energy mix- Predominance of thermal energy
- » Mains: Factors responsible for coal shortage and remedial measures

### Background:

- Recent reports have pointed to the critically low levels of coal in Indian Thermal power plants which could push India to a power crisis.
  - \* India relies on coal to meet over 70% of its power needs
- Many power plants are said to be operating with zero reserve stock or with stocks that could last just a few days.
  - \* According to data released by the Central Electricity Authority India's 135 thermal power plants overall had on average coal stock that would last just four days. 112 of the 135 power plants are operating with stocks that are at critical or super-critical levels.
- Some states have also resorted to partial load-shedding aimed at saving power.
- The current coal crisis comes amid a broader energy crisis across the world with the prices of natural gas, coal and oil rising sharply in the international market.

### Factors responsible for the coal shortage:

- Many factors have been blamed for the insufficient supply of coal. There are both transient as well as structural challenges which have resulted in the current coal shortage in India.

### **Poor domestic production:**

- The current crisis in the availability of coal can be mainly attributed to the lacklustre domestic production of coal. Despite repeated appeals by the central government to increase domestic coal production in India, Coal India Limited has failed to increase the domestic production.

### **Drop in coal imports:**

- There has been a sharp drop in coal imports over the last few years.
- The government in 2020 had stated that it would stop all coal imports by FY24.

### **Sudden spike in power demand:**

- Stagnating supply did not cause trouble last year with the economy shut down to tackle the COVID-19 pandemic. But the sudden rise in power demand this year has exposed the coal shortage in India.

### **Transient factors:**

- Short-term issues like flooding in coal-mining areas, transport issues, labour disruptions in major coal-mining countries have severely affected the coal supply chains.

### **Structural issues:**

- Structural problems have plagued the power industry in India.

- \* Populist politics have resulted in financially unviable pricing of electricity in India. The price that many consumers pay for power in India is not commensurate with the production costs. This has increased the debt burden on public sector companies like Coal India Limited and discouraged private investment in power generation sector. There is very little financial incentive that major producers across the supply chain, including miners, possess to ramp up production.
- \* The mining of coal is nearly monopolised by public sector companies like CIL. Coal India Limited (CIL) supplies over 80% of the total coal. There are big questions on the efficiency of CIL.

### **Conclusion:**

- Despite the ongoing climate action deliberations calling for the cutting down of fossil fuel consumption, fossil fuels are likely to remain critical to meet India's growing energy demands. Hence India should focus on making the thermal power sector resilient to supply shocks. Else it risks disrupting its economic revival in the post pandemic scenario.
- While the short term measure of allowing increased coal imports might help tide over the current crisis, there is also the need for more robust long term reforms like market determined power tariffs to ensure the financial viability of the sector in India.

## ***Indian Economy and issues relating to growth and development***

### **23. Greenfield hopes**

- » Prelims: Investment rate definition
- » Mains: Significance of investment rate in India's economic growth and governmental efforts at increasing it

### **Background:**

#### **Uptick in investment in the Indian economy:**

- The reducing burden of COVID-19 infections, accompanied by the gradual lifting of restrictions, has not only spurred an improvement in important economic indicators but has also led to a much-needed investment revival.
- Recent data have shown that the investment commitments and indicators of actual capital expenditure on the ground have recorded a more than robust growth in the second quarter (July-September quarter) after an insipid Quarter 1.
- In fact, the fresh investments in the first half of 2021-22 have been higher than even the pre-COVID year of 2019-20.

### **Significance:**

- Increased investment is inevitable for the economic growth of any country, especially for a developing economy like India. The uptick in investments could be indicative of the prospects of the Indian economy in the medium and long term.
- While the increased public expenditure forms the major part of the investment, the private capital outlays also amount to an impressive Rs. 4.87-lakh crore. This is significant as it could be considered indicative of the increasing confidence of the private sector in the Indian economy in the post-pandemic phase.

### **Governmental measures being taken:**

#### **PLI scheme:**

- The implementation of the "PLI" scheme to promote manufacturing investments in India is expected to further spur more investments in textiles, pharma, electronics over the second half of this year and 2022-23. The PLI scheme could help nudge a few investments away from Vietnam, Cambodia and Bangladesh towards India.

#### **Reforms in telecom sector:**

- The government recently approved several measures for the ailing telecom sector. The new reforms include nine structural reforms and five procedural reforms for the sector. The new reforms will go a long way in addressing the telecom industry's long-standing issues like spectrum auctioning and the AGR issue and help in its revival.

#### **Other measures:**

- The disinvestment process of the public sector firm, Air India and the nullification of the provisions for retrospective tax augur well for the investment climate in India as it will add to the confidence of prospective investors in India.

### **Recommendations:**

- The rebound in investments must be nurtured with the right policy measures to ensure sustained economic growth in India. In this direction, the article makes the following recommendations.

#### **Speedy implementation of schemes and policies:**

- Speedy implementation is essential to ensure the realization of the expected gains from the committed investments.
- Out of the 13 sectors for which PLIs have been announced, only nine have been notified so far, and the others must be spelt out quickly to ensure that global investors do not pick another destination.



### **International economic partnership:**

- India should seek to seal economic partnership pacts and scale up its ties with key markets like the EU, the U.S. and the U.K.

### **Improving perception of India on the international stage:**

- In a world where capital is increasingly influenced by environmental, social and governance standards, these factors should be given the requisite policy attention as well.
- India should focus on improving its image on key socio-economic parameters and adherence to the 'rule of law' while refraining from heavy-handed regulations like the draft norms for e-commerce.

### ***Indian Economy and issues relating to growth and development***

#### **24. 'Need strategic reserves of coal and gas'**

- » Mains: Measures to improve energy security of India

##### **Context:**

- The Centre has asked States to lift their hydropower output in a bid to conserve scarce coal supplies, stressing the need to build strategic reserves of imported coal and gas as was being done for petroleum products.

##### **The Coal Crisis:**

- Coal accounts for more than 70% of India's power generation.
- India, the world's second-largest coal importer with the world's fourth-largest reserves, must also compete for supplies with China.
- A surge in power demand combined with a fall in imports due to high global coal prices have led to supply disruptions and power cuts lasting up to 14 hours a day despite record supplies from state-run Coal India.
- Most of India's 135 coal-fired power plants have fuel stocks of less than three days.

##### **Need for Strategic Reserves:**

- At least in the foreseeable future, all the countries, especially major economies, will be dependent on fossil fuel supplies for base load and for grid balancing.
- And it is important for such economies to take measures to insulate themselves from these supply shocks of imported fuel. This becomes important in the backdrop of major supply disruptions due to the soaring global prices of coal, gas and oil.
- Keeping a strategic reserve of these fuels — gas, oil, imported coal would help the economies adjust and tide over these supply shocks at least in the short term.

- Many countries have started keeping strategic reserves because when it comes to a crunch, every country will meet its needs first.
  - \* For instance, Russia has curtailed gas supply to Europe because they want more gas to be consumed within their country.
- In the absence of a well thought out strategy, high prices will make energy security very challenging.

### ***Indian Economy - Agriculture***

#### **25. Indian farming practices: Learning from elsewhere in the world**

- » Prelims: Relay planting; strip cropping; mulching and no till agriculture
- » Mains: significance and challenges; Relevance and significance for India

##### **Context:**

- The article analyzes some of the agricultural practices prescribed by a paper that appeared recently in Proceedings of the National Academy of Sciences USA titled: "Integrated farming with intercropping increases food production while reducing environmental footprint"

##### **Details:**

- The paper recommends measures such as relay planting, strip cropping, soil mulching and no till practices.

##### **Relay planting:**

- In relay cropping the second crop is planted even before the first crop is harvested. Thus, both crops share some part of the season. Thus relay planting means the planting of different crops in the same plot, one right after another, in the same season.
- In some forms of relay cropping, in the beginning itself two or more crops of different durations are cultivated in the same field. When a crop of shorter duration is harvested the second crop gets better space to grow.
- Examples of such relay cropping would be planting rice (or wheat), cauliflower, onion, and summer gourd (or potato onion, lady's fingers and maize), in the same season.

##### **Strip cropping:**

- Strip cropping is a method of farming which involves cultivating a field partitioned into long, narrow strips which are alternated in a crop rotation system.
- Example: Strip cropping in the U.S. involves growing wheat along with corn and soyabean, in the same farm in an alternative manner.



- It involves within-field rotation or “strip rotation”, allowing strips for planting other plants (such as grass, fruits) besides the major crop.

#### **Soil mulching:**

- The process of covering the open surface of the ground by a layer of some external material, even when the land is in use is called mulching & the material used for covering is called as ‘Mulch.’
- Soil mulching can be done using naturally available agricultural waste such as crop straw and leaves.

#### **No till agriculture:**

- No-till farming is an agricultural technique for growing crops or pasture without disturbing the soil through tillage.

#### **Significance:**

##### **Relay planting:**

- Relay planting means less risk since the farmer need not depend only on one crop.
- It also leads to better distribution of labour since the human intervention will be required at different instances of the crop cycle for the different plants.
- Also insects spread less over the varied crops. This will allow for easier pest management.
- Given that legumes increase soil fertility, use of legumes as relay plants can help enhance agricultural yield.

##### **Soil mulching:**

- Soil mulching can help reduce soil erosion while helping retain soil moisture and beneficial organisms, such as earthworms which can help increase crop productivity.

##### **No till or minimal tilling:**

- No-till farming decreases the amount of soil erosion tillage causes in certain soils, especially in sandy and dry soils on sloping terrain.
- No-till farming, in which the soil is left undisturbed by tillage and the residue is left on the soil surface, is the most effective soil conservation system.
- It can also help in water conservation.

#### **Challenges:**

- Some of the major challenges in relay cropping includes challenges in adoption of mechanisation and also the agricultural management practices also become more complex.
- Practices like strip cropping are more viable on larger farms and may not be suitable for the small fields.
- Practices like no till agriculture require special equipments for sowing which could translate into higher upfront cost for the farmers. Also the practice is prone to fungal diseases.

#### **Application in India:**

- India has a significant population of small farmers, many owning less than 2 hectares of land. About 70% of its rural households still depend primarily on agriculture for their livelihood, with 82% of farmers being small and marginal. Also agricultural productivity continues to be on the lower side of the global averages and India’s agricultural sector is plagued by issues of indebtedness. The paper notes that the application of the above agricultural methods could help increase the annual crop yield, while at the same time decrease the environmental footprint, compared with traditional monoculture cropping. These methods hold immense significance for small farm holders who can grow more food and have a reduced environmental footprint.
- Also practices like strip cropping involving planting of trees to create shelters can help stabilize the desert in Western India.

#### **Issues related to financial sector in India- Microfinance**

#### **26. RBI microfinance proposals that are anti-poor**

- » Mains: Significance of microfinance in India; Challenges in the microfinance sector

#### **Background:**

- In June 2021, the Reserve Bank of India (RBI) published a “Consultative Document on Regulation of Microfinance”.

#### **Issue:**

- While the declared objective of the review is to promote the financial inclusion of the poor and competition among lenders, the likely impact of the recommendations is unfavourable to the poor.
- If implemented, they will result in an expansion of microfinance lending by private financial institutions, in the provision of credit at high rates of interest to the poor, and in huge profits for private lenders.
- The proposed guidelines will favour private credit institutions at the cost of public sector banks.

#### **The recommendations:**

- The consultative document recommends that the current ceiling on the rate of interest charged by non-banking finance company-microfinance institutions (NBFC-MFIs) or regulated private microfinance companies needs to be done away with.
  - \* This is because it is believed that it is biased against one lender (NBFC-MFIs) among the many (commercial banks, small finance banks, and NBFCs).

- It proposes that the rate of interest be determined by the governing board of each agency, and assumes that competitive forces will bring down interest rates.
- It also proposes to de-regulate the rate of interest charged by private microfinance agencies.
- Besides, the RBI has abandoned any initiative to expand low-cost credit through public sector commercial banks to the rural poor, the bulk of whom are rural women (as most loans are given to members of women's groups).

According to current guidelines, the 'maximum rate of interest rate charged by an NBFC-MFI shall be the lower of the following:

- the cost of funds plus a margin of 10% for larger MFIs (a loan portfolio of over ₹100 crore) and 12% for others; (or)
- The average base rate of the five largest commercial banks multiplied by 2.75'.

\* In June 2021, the average base rate announced by the RBI was 7.98%.

The website of some Small Finance Banks (SFBs) and NBFC-MFIs showed that the official rate of interest on microfinance was between 22% and 26% — roughly three times the base rate.

#### **Details on Microfinance – Crucial for households:**

- Microfinance is becoming increasingly important in the loan portfolio of poorer rural households.
- A study showed that:
  - \* Unsecured microfinance loans from private financial agencies were of disproportionate significance to the poorest households – poor peasants, wage workers, persons from the Scheduled Castes and Most Backward Classes.
  - \* These microfinance loans were rarely for productive activity and almost never for any group-based enterprise, but mainly for house improvement and meeting basic consumption needs.
  - \* Poor borrowers took microfinance loans, at reported rates of interest of 22% to 26% a year, to meet day-to-day expenses and costs of house repair.

#### **Concerns:**

- The rate of interest charged by private agencies on microfinance is the maximum permissible, a rate of interest that is far from any notion of cheap credit.
- The actual cost of microfinance loans is even higher for several reasons.

\* An official flat rate of interest used to calculate equal monthly instalments actually implies a rising effective rate of interest over time.

\* A processing fee of 1% is added and the insurance premium is deducted from the principal. As the principal is insured in case of death or default of the borrower or spouse, there can be no argument that a high interest rate is in response to a high risk of default.

• A shift to digital transactions refers only to the sanction of a loan, as repayment is entirely in cash.

\* Contrary to the RBI guideline of "no recovery at the borrower's residence", collection was at the doorstep.

• If the borrower is unable to pay the instalment, other members of the group have to contribute, with the group leader taking responsibility.

#### **Shift in Microfinance Lending:**

- In the 1990s, microcredit was given by scheduled commercial banks either directly or via non-governmental organisations to women's self-help groups, but given the lack of regulation and scope for high returns, several for-profit financial agencies such as NBFCs and MFIs emerged.
- By the mid-2000s, there were widespread accounts of the malpractices of MFIs and a crisis in some States such as Andhra Pradesh, arising out of a rapid and unregulated expansion of private for-profit micro-lending.
- The microfinance crisis of Andhra Pradesh led the RBI to review the matter, and based on the recommendations of the Malegam Committee, a new regulatory framework for NBFC-MFIs was introduced in December 2011.
- At present, privately-owned for-profit financial agencies are the "regulated entities". They have been promoted by the RBI.
- Lending by small finance banks (SFBs) to NBFC-MFIs has been recently included in priority sector advances.
- Post-COVID-19, the cost of funds supplied to NBFC-MFIs was lowered, but with no additional restrictions on the interest rate or other parameters affecting the final borrower.
- 31% of microfinance is provided by NBFC-MFIs, and another 19% by SFBs and 9% by NBFCs.
  - \* These private financial institutions have grown exponentially over the last few years, garnering high profits.
  - \* At this pace, the current share of public sector banks in microfinance (the SHG-bank linked microcredit), of 41%, is likely to fall sharply.

**Conclusion:**

- The proposals in the RBI's consultative document will lead to further privatisation of rural credit, reducing the share of direct and cheap credit from banks and leaving poor borrowers at the mercy of private financial agencies. This is not favourable especially at a time of widespread post-pandemic distress among the working poor. Concerns have been raised about the implications for women borrowers and it has been demanded that the rate of interest on microfinance not exceed 12% per annum. To meet the credit needs of poorer households, there is a need for policy reversal. Strengthening of public sector commercial banks and firm regulation of private entities is the need of the hour.

# INTERNATIONAL RELATIONS

## *International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's Interests*

### 1. **Nord Stream 2**

» Prelims: Nord stream

#### **Context:**

- Nord Stream 2 (NS2) running from Russia to Germany across the Baltic Sea has been complete.

#### **Nord Stream 2 System:**

- The NS2 pipeline runs along the already completed Nord Stream 1 system, and the two together will supply an aggregate of 110 billion cubic metres of gas to Germany per year.
- NS2's manufacture began in 2016 and construction in 2018.
- The 1,224 km, \$11-billion underwater link is the shortest, most economical and environment-friendly route to double Russia's gas export to Germany.
- The pipeline falls in German and Danish territory.
- This would take the Russian gas to Europe via Germany, under the Baltic Sea.
- The pipeline offers stability to the strategically important energy trade because Russia's dependence on the European Union and vice-versa are increased and this should promote realism.

#### **Controversy relating to NS2:**

- Since it was first planned, Nord Stream 2 has drawn criticism from the US.
- The US believes that the project would increase Europe's dependence on Russia for natural gas, thus boldening its President Vladimir Putin.
  - \* Currently, EU countries already rely on Russia for 40% of their gas needs.
- Ukraine also has issues with the project.
  - \* Relations between Ukraine and Russia have seriously deteriorated in the aftermath of the Crimean conflict in 2014.
  - \* There is an existing land pipeline between Russia and Europe that runs through Ukraine, which feels that with Nord Stream 2, Russia could bypass the Ukrainian pipeline, and deprive the country of lucrative transit fees.
  - \* Ukraine has not diversified its economic fundamentals, whose viability is dependent on Russia moving fossil fuels through its territory.

- \* But the loss of cheap money gained through transit fees could in the long run benefit its economy.

- German Chancellor Angela Merkel is accused, mainly by Poland and Ukraine, of weakening the EU's political unity and strategic coherence by giving Russia greater leverage through NS2.

#### **Way Forward:**

- The completion of NS2 suggests that no third party can affect the project's outcome.
- Any violation of the commercial rationale of NS2 by Russia would enable Ukraine to invoke the assurances it has been given.
  - \* Therefore, Russia must proceed in a manner that avoids friction.
- To enable a consensus on NS2, Germany has promised assistance to Ukraine for the development of hydrogen energy, but such commitments are less robust in their detail.

## *International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's Interests*

### 2. **Tax Inspectors Without Borders (TIWB)**

» Prelims: Seychelles

#### **Context:**

- Seychelles Tax Inspectors Without Borders (TIWB) programme launched in partnership with India.

#### **Details:**

- TIWB launched its programme in Seychelles with India as the chosen Partner Administration.
- India has provided Tax Expert for the programme.
- This programme is expected to be of 12 months duration during which India, in collaboration with the TIWB Secretariat and support of the UNDP Country Office in Mauritius and Seychelles, aims to aid Seychelles in strengthening its tax administration by transferring technical know-how and skills to its tax auditors through sharing of best audit practices.
- The focus of the programme will be on Transfer Pricing cases of tourism and financial services sectors.
- This programme is the sixth TIWB programme which India has supported by providing Tax Expert.

## *International Relations: Effect of policies and politics of developed and developing countries on India's interests*

### **3. A 'Taiwan flashpoint' in the Indo-Pacific**

- » Mains: China's repeated territorial ingression of Taiwan; Concerns associated with the developments for the region and global geopolitics

#### **Introduction**

- Taiwan, officially known as the Republic of China (ROC), is an island separated from China by the Taiwan Strait.
- The Chinese Communist Party (CCP) views the island as an unfinished business of China's liberation and vows to eventually "unify" Taiwan with the mainland.

#### **Civil war**

- The Chinese Communist Party's (CCP) war with the Kuomintang (KMT, or Nationalist Party) started in the 1920s.
- The KMT forces under Chiang Kai-shek lost the 1945-49 civil war to the CCP forces under Mao Zedong.
- Chiang retreated to the island of Taiwan and set up a regime that claimed authority over the whole of China and pledged to recover the mainland eventually.

#### **Role of US**

- The CCP always wanted to unite Taiwan with Mainland China but it was not able to conquer it by force as Taiwan became a military ally of the United States during the Korean War of 1950-53.
- This support to a larger extent came to an end when U.S. recognized the People's Republic of China (PRC) as the legitimate government of China in 1979 ending its official relationship with Taiwan and abrogating its mutual defence treaty with the island.

#### **'Strategic ambiguity'**

- It is the practice by a government of being intentionally ambiguous on certain aspects of its foreign policy.

#### **How it helps the USA?**

- The U.S. has declared that it will "maintain the ability to come to Taiwan's defence" while not committing itself to do so.
- Strategic ambiguity allows the United States to hide its cards in the various scenarios that may arise in the cross-strait relationship.
- Beijing will think twice about harming Taiwan, because it doesn't know for certain how the United States will respond and to what degree.

- This essentially acts as deterrence and at the same time maintains a carefully orchestrated balance of power by restricting all relevant parties from escalating the situation.

#### **China**

- China also has a policy of strategic ambiguity: a refusal to renounce the use of force against Taiwan, but retains the right to use force to achieve the objective. This is its own version of strategic ambiguity.

#### **Carrot and stick policy of China**

- China had promised to introduce "one country two systems" in Taiwan, which was first applied to Hong Kong after its reversion to Chinese sovereignty in 1997.
  - \* Hong Kong can have different economic and political systems from that of mainland China, while being part of the People's Republic of China.
  - \* China promised to honour Hong Kong's liberal policies, system of governance, independent judiciary, and individual freedoms for a period of 50 years from 1997.
- The same was promised to Taiwan, but with the added assurance that it could also retain its armed forces during the transition period.

#### **Economic links**

- In 1979, Deng Xiaoping announced the Open Door Policy.
- The open-door policy adopted a stance to achieve economic growth through the active introduction of foreign capital and technology while maintaining its commitment to socialism.
- After this policy was introduced, Taiwan business entities have invested heavily in mainland China and the two economies have become increasingly integrated.

#### **A look at numbers**

- Between 1991 and 2020, the stock of Taiwanese capital invested in China reached U.S. \$188.5 billion and bilateral trade in 2019 was U.S. \$150 billion, about 15% of Taiwan's GDP.
- By contrast, the stock of Chinese capital invested in Taiwan is barely U.S. \$2.4 billion although investments through Hong Kong may be considerable.

#### **Concerns for Taiwan**

- The Govt in Taiwan in the past has tried to reduce the island's economic exposure to China, but has been abortive.
- China is also capable of inflicting acute economic pain on Taiwan through coercive policies if the island is seen to drift towards an independent status.



## Taiwan's politics

Taiwan has two major political parties.

### 1. The KMT

- It is dominated by the descendants of the mainlanders who came to the island along with Chiang Kai-shek in 1949.
- It remains committed to a one-China policy and does not support the independence of Taiwan.

### 2. Democratic Progressive Party (DPP)

- It is more representative of the indigenous population of the island, and favours independence.

## How does China view these political parties?

- China feels more comfortable with the KMT and is hostile to the DPP.
- DPP won the elections in 2016 under the leadership of Tsai Ing-wen. After the elections, China has resorted to a series of hostile actions against the island, which include economic pressures and military threats.
  - \* The threats have increased since the re-election of Tsai Ing-wen in the 2020 elections.
  - \* Public opinion in Taiwan swung in favour of Tsai Ing-wen primarily because of China initiating intimidating tactics in Hong Kong and abandoning the 'One Country Two Systems' formula.
- China could no longer pretend that the model was relevant in any sense to Taiwan's future under Chinese sovereignty.

## Inference

- One important implication of this development is that prospects for peaceful unification have diminished.
- Sentiment in Taiwan in favour of independent status has increased.
- The escalating military threats against Taiwan, through daily violations of its Air Defence Identification Zone (ADIZ) and aggressive naval manoeuvres in the Taiwan Strait, are currently deterrent in nature, aimed at heading off any move towards independence and its closer military relationship with the U.S.

## The U.S. stance

- The USA will not support the idea of an independent Taiwan. However, it has gradually reversed the policy of avoiding official-level engagements with the Taiwan government.
- Examples:
  - \* Senior and Cabinet-level officials from the Trump Administration had visited Taiwan.
  - \* Joe Biden Administration continues with the same policy.

- The Taiwanese representative in Washington was invited to attend the presidential inauguration ceremony (Biden), again a first since 1979.
- There are reports which say U.S. defence personnel have been training with their Taiwanese counterparts for some time.
- A U.S. nuclear-powered submarine reportedly ran into an "unidentified object" while in the South China Sea.

## China's Response

- China has objected to these U.S. actions vociferously.
- Chinese President Xi Jinping said, "The historic task of the complete reunification of the motherland must be fulfilled and will definitely be fulfilled."

In spite of these differences and aggression Mr. Biden has assured Mr. Xi that the U.S. would abide by the "Taiwan agreement", that is, the U.S. would not overturn its one China policy.

## Is China prepared to carry out military operations to invade and occupy Taiwan?

- U.S. Pacific Commander, Philip Davidson, has a word of caution where he iterates China may invade Taiwan in the next few years to capture power and displace the USA from Asia
  - \* Other analysts argue that cross-strait operations would be extremely complex and pacifying a hostile population may prove to be long drawn out and costly.
- China may, therefore, be content to head off Taiwan independence while continuing to build its capabilities and await a further relative decline of U.S. power and its will to intervene in the defence of Taiwan.

## Impact of alliances

- The submarine incident might have been an accident or a miscalculation but it surely rings alarm bells in the Indo-Pacific region.
- The Quad grouping of which India is part of, along with AUKUS, with Australia owning nuclear-powered submarines, may act as a deterrent against Chinese moves on Taiwan.
- But they may equally propel China to advance the unification agenda before the balance changes against it in the Indo-Pacific.

## Conclusion

- For these reasons, Taiwan is emerging as a potential trigger point for a clash of arms between the U.S. and China.
- In pursuing its Indo-Pacific strategy, India would do well to keep these possible scenarios in mind.

## International Relations: Foreign policy

### **4. A strategy for India in a world that is adrift**

- » Mains: Emergence of Asia-Pacific as a centre of geopolitical importance; Significance for India and measures to be adopted by India

#### Context:

- The article discusses the tectonic shift in the polarity in international relations, from bipolar to a multipolar world and now moving towards a world of several power centres.

#### Examples

- The lack of a coherent international response to the COVID-19 pandemic is proof of an absence of international order and of the ineffectiveness of multilateral institutions.
- Ineffective international response to climate change and other transnational threats.
- Stagnation in the global and Indian economies and a retreat from globalisation, the regionalisation of trade, a shifting balance of power, the rise of China and others, and structural China-United States strategic rivalry have shifted the geopolitical and economic centres of gravity from the Atlantic to Asia.

#### Asia as the nucleus

- Asia will be the epicentre of geopolitical rivalries.
- With the growth of China, politically and economically, it sees a window of opportunity in Asia.
- China also knows the U.S. remains the most formidable power. Steps taken in haste suggest that China believes that the window may close or is already closing due to push back from the West and others.

#### India

- China's power and profile may continue to expand, especially along the political boundaries of India and China.
- This may result in both confrontation and cooperation, and the friction between countries could end with a third party taking advantage of the tussle.

#### Inference

- Overall, it may not result in conventional conflict between the great powers in Asia, though other forms and levels of violence and contention in the international system may arise.
- Example: Taiwan Issue

#### Options for India

- India should work more closely with the USA in fields significant for India's transformation like energy, trade, investment, education and health.

- \* Other areas in which India and the U.S. could increase cooperation are climate change and energy, tech solutions for renewable energy, and digital cooperation.

- Many middle power countries have a say in the international order. India should identify and cooperate.

- \* There is also an increasing possibility of working with partners in the developing world building broader coalitions on issues of common interest.

- A large scale transformation is seen in the digital space. India should be part of the growth story.

#### Recommendation

- India should create a Maritime Commission. It will be a Bay of Bengal Initiative with partner countries that will help in domains like maritime security, cyber security and counter-terrorism. We should aim for multipolarity in Asia.
- New Delhi should have an independent judgment of current tensions, develop our capacities, and create an equitable and enabling international order for India's transformation in line with the core strategic principles of Non-Alignment.
- At the same time, we must adjust to changing circumstances, engage with this uncertain and volatile world.
  - \* One productive way to do so would be through issue-based coalitions including different actors, depending on who has an interest and capability.
- India should revive the South Asian Association for Regional Cooperation (SAARC).
  - \* The over securitisation of policy towards our neighbours has driven trade underground, criminalized our borders, and enabled the large-scale entry of Chinese goods destroying local industry in the northeast.
  - \* Trade-related activities have to be increased.

#### Way forward

- Globalisation has been central to India's growth. A more active regional and international role for India is incompatible with a position on the margins of the global economy. Self-reliance in today's world and technologies can only be realised as part of the global economy.
- We should not imitate China's claims to being a civilisational state and its adoption of victimhood. Instead, we should affirm our own strength and historic national identity.
- In sum, we see self-strengthening as an absolutely essential precondition as also safeguarding the foundational sources of India's international influence.

- We cannot separate our domestic trajectory from the external course we need to pursue to transform India into a strong, secure and prosperous country.

### **International Relations: India's bilateral relations**

#### **5. The sanctions cloud over India-U.S. ties**

- » Prelims: CAATSA; S-400 Triumf
- » Mains: Deepening of Indo-U.S. defence partnership; Challenges

##### **Context:**

- India's Chief of the Air Staff had recently clarified that the delivery of the S-400 Triumf air defence systems from Russia is expected according to schedule.
  - \* India is scheduled to receive five squadrons of the surface-to-air missile systems from Russia.
- The U.S. Deputy Secretary of State had publicly announced that she was hoping that both the U.S. and India could amicably resolve the issue of India purchasing S-400 missile system from Russia and the possibility of the U.S. sanctioning India for this purchase under its Countering America's Adversaries through Sanctions Act (CAATSA).
  - \* The Countering America's Adversaries through Sanctions Act (CAATSA) was enacted by the U.S. Congress to discourage trade in the defence and intelligence sectors of Russia.
  - \* The U.S. had imposed sanctions on its NATO ally, Turkey and even China for the procurement of the S-400 missile system. The sanctions include suspending the export licence, banning American equity/debt investments in entities, prohibiting loans from U.S. financial institutions and opposing loans from international finance institutions.
  - \* Despite the CAATSA, India had gone ahead and signed the agreement with Russia and also paid an advance for the S-400 missile system.

##### **India's stand on the issue:**

- India maintains that it enjoys sovereign rights to purchase defence equipment for its safety and security. India has stressed the tactical importance of the defence missile systems considering the environment in the Indian subcontinent wherein India could as well face a two-front war with China and Pakistan.

### **Arguments against the imposition of CAATSA sanctions on India:**

- In the light of one section in the U.S. favouring the imposition of sanctions against India for its purchase of the S-400 missile system, the article argues that such a move should be avoided based on the following arguments.

#### **Damage the India-U.S. relationship:**

- The Imposition of CAATSA sanctions against India would have an adverse impact on the otherwise growing India-U.S. bilateral relationship.
  - \* The bilateral relationship between the U.S. and India now spans 50 sectors, including critical sectors like defence and economy. India has also been cooperating with the U.S. on matters of critical security.
- India has also lately exhibited some degree of strategic tilt towards the U.S. amidst the evolving situation in the regional as well as global platforms. In such a scenario the imposition of sanctions against India could lead to stirring up of the latent belief in the Indian political leadership and top bureaucracy that the U.S. cannot be relied upon as a partner.

#### **Changing defence trade scenario:**

- India has been diversifying its defence purchases and reducing its dependency on Russia.
  - \* Over the last decade, India's military purchase from Russia has steadily declined. India's import of arms decreased by 33% between 2011-15 and 2016-20 and Russia was the most affected supplier, according to a report by the Stockholm-based defence think-tank SIPRI.
  - \* In the same period, government-to-government deals with the U.S. touched \$20 billion and deals worth nearly \$10 billion are under negotiation. The U.S. designated India as a Major Defence Partner in 2016 and gave India Strategic Trade Authorisation-1 which allows India access to critical defence technologies developed in the U.S. Also notably, defence manufacturers in both countries are exploring ways to co-develop and co-produce military equipment.
- Notably, one important provision in the CAATSA allows for a temporary waiver from sanctions for those countries which are trying to scale down their defence ties with Russia.

#### **Evolving regional and global scenario:**

- The geopolitical situation in the region is undergoing a drastic change. Today, there is a growing relationship between China and Russia with both countries seeking to expand engagement in Afghanistan from where the

U.S. withdrew its military after two decades of war. The U.S. is seeking to contain China and its growing assertiveness in the region via its Pivot to Asia policy.

- India is having to deal with an increasingly aggressive China along its northern borders which have witnessed repeated Chinese incursions.
- India could play a critical role in this direction given India's centrality in the Indian Ocean region. Shedding its traditional non-alignment posture India has been actively engaging with the U.S. and other like-minded countries on multilateral forums like the Quadrilateral Security Dialogue.
- The move to impose sanctions on India based on the CAATSA could push India towards its traditional military hardware supplier, Russia.

#### **Does not affect U.S.'s interests:**

- Given India shares the same vision as the U.S. on the Indo-Pacific construct and both the countries share strategic coherence on a wide range of issues, India's purchase of the S-400 missile system does not endanger the U.S.'s national security or affect its military operations in an adverse manner.

#### **Conclusion:**

- The CAATSA test will determine the course of the India-U.S. strategic partnership.
- Notably, the CAATSA provides for a presidential waiver. This allows the President to waive sanctions in certain circumstances. This provision should be exercised by the U.S. President to provide a waiver for India for its purchase of the S-400 missile system from Russia.

#### ***International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's Interests***

#### **6. Hidden debt rising for partners of China's BRI plan**

- » Prelims: Asia-Africa Growth corridor; Global Infrastructure facility; Build Back Better World Partnership
- » Mains: Debt trap diplomacy of China; Implications for India

#### **Context:**

- Study on the increasing debt among countries borrowing from China.

#### **Details:**

- A new study by AidData, a development research lab at the College of William & Mary in the U.S., has found that the Chinese debt burdens among many countries under China's Belt and Road Initiative (BRI) are substantially larger than previously estimated.
- Notably, most of this debt remains hidden from the country's accounts as an increasing number of the project deals are being struck not directly between governments but structured through often opaque arrangements with a range of financing institutions. Hence they remain systematically under-reported to the World Bank's Debtor Reporting System (DRS).
  - \* Currently, nearly 70% of China's overseas lending is now directed to state-owned companies, state-owned banks, special purpose vehicles, joint ventures, and private sector institutions. This leads to what experts have termed as opaque lending practices of China.
- The study estimates that the average government is under-reporting its actual and potential repayment obligations to China by an amount that is equivalent to 5.8% of its GDP and collectively, these under-reported debts are worth approximately \$385 billion.
- 42 countries now have debt exposure to China in excess of 10% of GDP.
- India ranked 23rd in the list of top recipients of Chinese loans from 2000 to 2017, receiving \$8.86 billion.

#### **Debt trap diplomacy:**

- There has been a surge in lending from Chinese institutions over the past two decades.
- There are reports about China using relatively high valued interest loans with short maturity lengths to fund mostly non-viable projects. This invariably impacts the ability of the borrowing nations to repay the debt back to China. This sort of predatory lending has resulted in debt distress in many borrowing countries.
- Chinese institutions use collateralisation to mitigate repayment risk and have been able to take over strategic assets in some countries. Also in some cases, the borrowing countries have been forced into accepting economic concessions in exchange for debt relief.
  - \* Sri Lanka has had to hand over the Hambantota port to China over a 99-year lease due to the inability to repay back the Chinese loans.
  - \* China has also secured a large swathe of land in the strategic Pamir mountains from Tajikistan in exchange for debt forgiveness.
- China has thus been able to use debt to establish a dominant position in the international development finance market.



- The financial and economic dominance may also be converted into political leverage which can be used to influence domestic and foreign policy decisions of indebted countries.

#### **Factors contributing to debt trap:**

- Lack of adequate financing options for infrastructure projects for middle and low-income countries
- Predatory lending practices of China
- Scandals and corruption
  - \* A high proportion of the BRI infrastructure project portfolio has encountered major implementation problems, such as corruption scandals or labour violations.

#### **Implications for India:**

- Debt distress and coercive tactics from China may help China increase its political influence among India's neighbouring countries like Sri Lanka, Bangladesh, Myanmar and Nepal. This could strain the bilateral relations with such countries.
- Also, the commercial assets being taken over by China in exchange for debt relief could be used by China for military purposes. This poses serious security risks for India.

#### **Way forward:**

- The international community must provide alternatives to Chinese infrastructure financing.
- Initiatives like the Asia-Africa Growth corridor (India-Japan collaboration), Global Infrastructure facility (G-20) and Build Back Better World Partnership (G-7) should be expanded to meet the infrastructural needs of the developing countries.

### **International Relations: Important international events**

#### **7. Lebanon on edge after sectarian unrest**

» Prelims: Lebanon

##### **Context:**

- Sectarian unrest in Lebanon.

##### **Details:**

- Sectarian politics have divided Lebanon and fuelled civil conflict since independence.
- At least six people have been shot dead in Beirut as demonstrations related to a probe into 2020's catastrophic port blast prompted the city's worst civil violence in years.
- Shi'ites and Christians have lined up on opposite sides of this standoff.
- The country is suffering one of the world's worst-ever economic meltdowns. The latest bloodshed adds to the woes of the country.

##### **Issue:**

- Political tensions have been building over the probe into the explosion, which killed more than 200 people and devastated swathes of Beirut.
- The judge has sought to question a number of senior politicians and security officials, including Hezbollah allies, suspected of negligence that led to the explosion, which was caused by a huge quantity of ammonium nitrate.
  - \* All have denied wrongdoing.
- Some of the most prominent suspects sought for questioning on suspicion of negligence are Shi'ite allies of the heavily armed, Iran-backed Shi'ite group Hezbollah.
- Recent shooting erupted as protesters headed to a demonstration called by Hezbollah and its ally Amal to demand the removal of the judge investigating the port blast.

#### **How has it impacted Lebanon?**

- Besides, the latest bloodshed takes place against the backdrop of one of the world's sharpest economic depressions, which spiralled from the meltdown of its financial system in 2019.
- The collapse, which has driven about three-quarters of Lebanese into poverty and sunk the currency by 90%, was caused by decades of financial mismanagement and corruption by the sectarian elite.
- Lebanon's collapse is driving ever more people to emigrate.
  - \* It is causing a brain drain across the sectarian spectrum which economists say will set back Lebanon for years.
- Also, Lebanon's web of sectarian rivalries is complicated by foreign interests.

#### **Way Forward:**

- The new government has vowed to revive negotiations with the IMF to secure a rescue package.
- But Lebanon must first agree on the size of vast losses in the financial system.
- It should agree on how the losses should be shared out.

### **International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests**

#### **8. Sri Lankan fishermen seek India's action over disputes**

- » Prelims: Palk strait
- » Mains: Issues involved and recommendations to solve them

### **Context:**

- Sri Lanka's northern fishermen want the authorities in India and Sri Lanka to urgently step up action to resolve the long-persisting conflict in the Palk Strait.

### **Issue:**

#### **Palk Strait issue:**

- The fishermen's deaths serve as a stark reminder of the unresolved fisheries conflict in the Palk Strait.
- The issue has become acute from the time Sri Lanka's 30 year-long civil war ended in 2009. At the end of the civil war, Sri Lanka's northern Tamil fishermen, who were displaced and barred access to the sea, began returning to their old homes. The resumption of fishing activities from North Sri Lankan fishermen led to tension with Tamil fishermen on the other side of the sea over the marine resources of the region.

#### **Bottom trawling:**

- The practice of bottom trawling by Tamil Nadu fishermen is a grave concern.
- The bottom trawling fishing method involves dragging large fishing nets along the seabed, scooping out prawns, small fishes and virtually everything else at one go. This practice is deemed destructive and antithetical to sustainable fishing practices. It involves a large volume of bycatch which could be destructive to fishing populations. As a result, the fish catch has fallen drastically and many varieties of fish have been vanishing.
- Also, incessant bottom trawling along the coast of Tamil Nadu over the years has meant that the Tamil Nadu fishermen are drawn to the relatively resource-rich Sri Lankan waters.

#### **Livelihood issue:**

- The daily wage fishermen are largely dependent on fishing and any disruption in the fishing activity poses a huge risk to the lives of their families.
- While the vessel owners have been able to reap substantial profits, the fishermen receive only meagre incomes while facing huge risks to their lives.

#### **Approach of Sri Lanka:**

- The Sri Lankan state's response to the problem has been largely a military and legal one, tasking its Navy with patrolling the seas and arresting "encroachers", banning trawling, and levying stiff fines on foreign vessels engaged in illegal fishing in its territorial waters.
- This has been inconsistent with the need for

a more holistic humanitarian approach as proposed by the Indian side.

#### **Impact on the bilateral relation between India and Sri Lanka:**

- The Palk Bay conflict could be the biggest test yet to the bilateral relationship between India and Sri Lanka.
- The issue has gained political mileage in both countries and hence could have a disastrous impact on the relationship.

#### **Situation on ground:**

- The plan to keep the fishermen from Tamil Nadu from resorting to exploiting the remaining fishery resources on the Sri Lankan side by replacing their trawlers with deep-sea fishing vessels has not really taken off.
- There has been no breakthrough in talks between the fishermen from both countries.
- The sticking point has been a differing approach that is being suggested from both sides. Sri Lanka is backing the joint patrolling by both countries, and a ban on unsustainable fishing practices such as bottom trawling by the Tamil Nadu fishermen.
- The Indian side wants a more gradual phase-out period and not an immediate one. Political leaders in Tamil Nadu rarely acknowledge that the state's fishermen contribute immensely to the problem by crossing territorial waters.
- The incursions into Sri Lankan waters are largely driven by trawler owners who compel their poor employees to do so and while obeying the orders, the poor employees either get killed or arrested.
- A comprehensive solution, one that would severely curtail unauthorised fishing and help in an orderly sharing of and sustainable use of resources by fishermen from both sides, is long overdue.

#### **Proposed solutions:**

- Permit licensed Indian fishermen to fish within a designated area (e.g. 5 nautical miles) of Sri Lankan waters and vice versa.
- There is precedent in the 1976 boundary agreement, which allowed licensed Sri Lankan fishermen to fish in the Wadge Bank (a fertile fishing ground located near Kanyakumari) for a period of three years.
- Poaching and Trawling – further limiting the days, timeframe, and location for fishing and an immediate end to bottom trawling.
- Trawlers have been referred to as the "hoovers of the shelf bottom" and "bulldozers mowing down fish and other benthic species."
- Indian fishermen point out that unless its

government introduced concrete steps to buy back trawlers, it would not be possible to stop trawling operations. The government should implement a buy-back arrangement as soon as possible. There is unlikely to be much opposition from trawler owners and fishermen because they know the reality.

#### **Way Forward:**

- India must view the Palk Bay region as a common heritage of the two countries and project this vision.
- There is a need for an authority, comprising fisheries experts, marine ecologists, fishermen's representatives, strategic specialists, and government officials.
- The humanitarian approach that has been expected to be the cornerstone of the approach to this conflict has not always been discernible.

#### **International Relations: Effect of policies and politics of developed and developing countries on India's interests/diaspora**

#### **9. China tested 'nuclear capable hypersonic missile', says report**

- » Prelims: Hypersonic; Scramjet technology
- » Mains: Implications for India

#### **Context:**

- China's military has carried out its first-ever test of a nuclear-capable hypersonic missile.

#### **Details:**

- Chinese military launched a rocket that carried a hypersonic glide vehicle.
  - \* The vehicle was launched on a Long March rocket, which is used for the space programme.
  - \* Hypersonic speeds are 5 or more times the speed of sound.
- The missile has demonstrated an advanced space capability.
  - \* It circled the globe, flew through low-orbit space before cruising down towards its target.
  - \* However, it missed its target by about two-dozen miles.
- The development has caught U.S. intelligence by surprise.
  - \* It is believed that the test would pose a big challenge to U.S. missile defence systems because the weapon could, in theory, fly over the South Pole.
  - \* This would pose a big challenge for the U.S. military because its missiles defence systems

are focused on the northern polar route.

#### **Implications for India:**

- This test by China certainly needs to be watched closely by the world, especially India considering its issues along the LAC with China in the recent past.
- Such capabilities highlight the threat for India's space assets along with the surface assets.
- The offence system operating at hypersonic speeds would mean the requirement to develop defence systems at these speeds.
  - \* India too is working on hypersonic technologies.
  - \* India's DRDO successfully flight-tested the Hypersonic Technology Demonstrator Vehicle (HSTDV), with a capability to travel at 6 times the speed of sound in September 2020.
    - » A solid rocket motor of Agni missile took it to an altitude of 30 km where the cruise vehicle separated as planned.
    - » The hypersonic combustion sustained and the cruise vehicle continued on its desired flight path at a velocity of six times the speed of sound for more than 20 seconds.
- \* In December 2020, an advanced Hypersonic Wind Tunnel (HWT) test facility of the DRDO was inaugurated in Hyderabad.
  - » It is a pressure vacuum-driven, enclosed free jet facility that simulates Mach 5 to 12.

#### **Scramjet Technology:**

- Most hypersonic vehicles primarily use scramjet technology.
- Scramjets are a category of engines designed to handle airflows of speeds in multiples of the speed of sound.
- This extremely complex technology also needs to be able to handle high temperatures.
  - \* This makes the hypersonic systems extremely costly.
- It is all about how long the systems can be sustained at those extreme conditions.
  - \* Most military powers in the world are in the process of developing hypersonic systems.

#### **Note:**

- Only the U.S., Russia and China are developing hypersonic glide vehicles that are launched on rockets and then orbit the earth at their own speed.

- They are difficult to track because unlike ballistic missiles, they do not follow the fixed parabolic trajectory.

## ***International Relations: Foreign Policy***

### **10. A shadow foreign policy for the first time**

- » Mains: Evaluation of India's recent foreign policy; Recommendations for future foreign policy approach

#### **Context:**

- The Centre for Policy Research (CPR) has come out with the document titled 'India's Path to Power: Strategy in a world adrift', outlining an alternative to the present foreign and defence policies of the government of the day.

#### **Evaluation of India's recent foreign policy:**

##### **Success in foreign relations:**

- India has adopted an innovative, bold and assertive foreign policy in recent times.
- India has been able to overcome the hesitations of history and has adopted a more pragmatic approach to its foreign policy. It has broken out from traditional moulds of non-alignment and adopted a strategic multi-alignment strategy keeping in mind the national interest.
- After the failure of peace initiatives with Pakistan, India has adopted a firm stand against state-sponsored terrorism originating from Pakistan and has been able to convince international organizations and several countries to exert pressure on Pakistan. The sanctioning by the FATF of Pakistan has forced Pakistan to take some measures to dismantle terror networks in the country.
- India's relations with Israel and the Arab countries have become productive.
- India has been able to ensure the deepening of its ties with the U.S. despite a political change in the U.S.

##### **Failures in foreign policy:**

- The efforts to strengthen relations with the neighbours have not materialised for India. Its relationship with countries like Nepal, Sri Lanka continues to be at an all-time low. China's influence in these countries seems to be growing at the cost of India's.
- China's incursion into Ladakh marks a failure of India's attempts to contain the increasingly assertive nature of China.

#### **Details:**

- The document is critical of the foreign and defence policies of the current government and argues that such policy is not conducive to finding a path to power for India in the post-

pandemic world.

- The document notes with concern that domestic issues have impacted foreign policy and suggests that India should set its house in order to stem the tide of international reaction. It warns against the perverse impact of domestic political and ideological factors driving India's foreign policy. It warns that political polarisation and majoritarianism could diminish India's strength on the international stage.
  - \* The foundational source of India's influence in the world is the power it enjoys and this rests on four pillars, domestic economic growth, social inclusion, political democracy and a broadly liberal constitutional order.
- The report criticizes the omni-directional Indian foreign policy.

#### **Recommendations:**

- The document calls for a change in India's foreign policy and makes the following recommendations.

##### **Increasing multilateral engagement:**

- The document warns that it would be incorrect and counterproductive for India to turn its back on globalisation and in this direction it calls on India to intensify its multilateral engagement.
- The document suggests that SAARC should be revived and that India should rejoin the Regional Comprehensive Economic Partnership and continue its long-standing quest for membership in the Asia-Pacific Economic Cooperation.

##### **Maintaining strategic autonomy:**

- The report stresses the importance of strategic autonomy in the ever-changing world. It suggests maintaining good relations individually with both the U.S. and China.

##### **China Policy:**

- The report acknowledging the influence of China on India's external environment suggests a combination of engagement and competition with China.

##### **Pakistan policy:**

- The report suggests the resumption of dialogue and a gradual revival of trade, transport and other links with Pakistan.

#### **Conclusion:**

- Though the suggestions made by the report are open to deliberation, the significance of the report is that it reveals the end of the era of consensus foreign policy and presents a shadow foreign policy for the first time in India.
  - \* The shadow cabinet is a feature of the Westminster system of government. It consists of a group of opposition spokespeople who, under the leadership of the Leader of the Opposition, form



an alternative cabinet to that of the government.

- \* Members of a shadow cabinet have no executive power. It is the shadow cabinet's responsibility to scrutinise the policies and actions of the government, as well as to offer alternative policies.
- \* India does not have a tradition of shadow cabinets.

### ***International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's Interests***

#### **11. Squaring off again in the Himalayan heights**

- » Mains: Border crisis along the LAC; Measures to be taken by India.

##### **Context:**

- The article analyses the growing Chinese assertiveness along the India-China border.

##### **An aggressive focus on India**

- Threat from China has persisted for a long time and it looks like they are not interested in ending the prolonged deployment along the border area.
- They have stepped up the border infrastructure, placed advanced military equipment and we have witnessed a sharp increase in the number of military exercises directed towards India.
- These actions are not limited to Ladakh but have also been initiated in the middle and eastern sectors of the 3,488-kilometre-long Line of Actual Control (LAC).

##### **Border incidents**

1. Barahoti in Uttarakhand
  - Barahoti is a disputed area between the two sides

but it has been a demilitarised zone. No persons in uniform enter the area.

- This was violated when Chinese soldiers reportedly crossed over to Barahoti ridge through Tun Jun Pass.
  - \* The Barahoti ridge lies north of the Nanda Devi National Park.
  - \* The ridge is connected to Joshimath, where the Indian Army and ITBP have camps to counter any major PLA operations.
    - » The ITBP monitors the nearly 350 km border in Uttarakhand which is part of the Line of Actual Control that divides India and China.

- They damaged some infrastructure, including a bridge and is believed that the group stayed in the vicinity for around three hours.

#### **2. Arunachal Pradesh**

- China has increased the number of military exercises across the contested border in Arunachal Pradesh, denoting the PLA's intention to keep the Indian military under pressure.
- It will carry a risk of triggering an unintended escalation.

##### **Reasons for PLA's aggressive approach against India**

1. Reestablishing the credibility of China's Army
  - The first is its institutional interest as the 'army of the revolution' which is now losing its primacy to the PLA Air Force and PLA Navy when it comes to Taiwan or the South China Sea.
  - With China having resolved its boundary disputes with most countries, the only major adversary available for the PLA to reassert its importance is India.
2. India's growing presence and development of infrastructure in the border area



- India is now expanding its footprint in those areas along the border which it had previously abstained. This expansion is due to better connectivity and the development of infrastructure.
- India's intervention in Doklam to protect its interests may have allowed China to reconsider its India strategy, reinforcing its apprehensions about territorial losses.
- Western scholars say that there is a strong constituency in the PLA that wants to put India in its place, evoking an eerie parallel to the discourse in Mao's China after 1959.

#### India's response

- In response to the PLA's actions on the LAC, the Indian military has also inducted more modern military platforms and systems on the China border which has been backed by infrastructure construction.
- Vast operational experience of Indian troops in hostile climatic and terrain conditions can help India to challenge China's assertiveness.

#### Weakness

- Demonetization and COVID-19 have affected India's defense spending.
- Technological Asymmetry
  - \* Indian Air Force (IAF) would need about 60 fighter jet squadrons by 2020 for a serious two-front threat from China and Pakistan but it is currently at 30 with numbers further reducing.
  - \* The Indian Navy Chief proposed for another aircraft carrier but was declined due to a dearth of funds.
  - \* The parliamentary standing committee on defence has repeatedly warned about the abnormally high share of vintage equipment in the Indian Army's profile.
- Majoritarian Politics has affected India's Interest
  - \* India's policy change in Kashmir may have troubled the United Arab Emirates-brokered backchannel deal with Pakistan.
    - » Infiltration continues further aggravating violence in the region.
  - \* Bangladesh's minorities are living in fear because of extreme events in the country.
    - » India may have put pressure on Dhaka to address violence.
    - » However, India should also be careful that its influence is not treated as interference.
  - \* Lack of institutional checks and balances on the political executive.

» In the Ladakh border crisis, the Government and its supporters were in denial about the Chinese ingress into the Indian Territory.

- Use of euphemisms like 'friction points' for places of Chinese ingress or
- removal of an official report about Chinese presence across the LAC from the Defence Ministry's website or
- Non-acknowledgement of Indian soldiers in Chinese captivity after the Galwan clash have been done to evade political accountability.

» Parliament has not been allowed to ask questions or seek clarifications; nor has the parliamentary standing committee deliberated upon the issue.

» Large sections of Indian media have been complicit in this cover-up, keeping the public in the dark and blocking the feedback loop that keeps democratic governments honest and responsive.

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\* Large sections of Indian media have been complicit in this cover-up, keeping the public in the dark and blocking the feedback loop that keeps democratic governments honest and responsive.

#### Geopolitics arising out of the great power competition in the Indo-Pacific

- India's active participation in Quad has irked China, it sees the grouping as a threat against its expansionist interests in the South China Sea.
- U.S.-India defense relations, expanded trade relationship has further made China look at India with suspicion.

#### Way forward

- India has been applying a combination of building up pressure through military presence, economic policies, and diplomatic advances. India needs to keep up and build upon this pressure.
- China's aggression in Ladakh is an opportunity for India to redefine its security architecture.

#### International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's Interests

#### 12. UN unveils fund for 'people's economy' in Afghanistan

- » Mains: Economic fallout of recent developments in Afghanistan; Regional implications

### Context:

- The United Nations has set up a special trust fund to provide urgently-needed cash directly to Afghans through a system tapping into donor funds frozen since the Taliban takeover.

### Details:

- Cash will be provided to Afghan workers in public works programmes, such as drought and flood control programmes.
- Grants would be given to micro-enterprises.
- Temporary basic income would be paid to the vulnerable elderly and disabled.

### Concerns:

- According to the International Monetary Fund, Afghanistan's economy is set to contract up to 30% in 2021 and this is likely to further fuel a refugee crisis that will affect its neighbouring countries, Turkey and Europe.
- The Taliban takeover saw billions in central bank assets frozen and international financial institutions suspend access to funds.
- While humanitarian aid has continued, the major concern is that the banks are running out of money, civil servants have not been paid and food prices have soared.

### *International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests*

## **13. Energy cooperation as the backbone of India-Russia ties**

- » Mains: Bilateral co-operation between India and Russia in the energy sector

### Context:

- The article analyses the energy cooperation between India and Russia and the potential of such a partnership not only for the two countries involved but for the global energy framework.

### Bilateral cooperation in the energy domain:

- India and Russia have an extensive record of bilateral cooperation in the energy domain.
- The companies of both the countries have been pushing for greater cooperation in the oil and gas sector. All of Russia's major energy companies have expressed interest in projects in India. Russia's Gazprom and India's ONGC Videsh Ltd. (OVL) and the Indian Oil Corporation signed separate memorandums of understanding to augment energy cooperation.
- Russia is among the largest investors in India's energy sector. Around U.S.\$32 billion have been invested in joint projects between the companies of the two countries.

- \* A few years ago, Rosneft invested U.S.\$12.9 billion in India's Essar Oil, renamed Nayara Energy, marking it one of the most significant foreign investments in years.

- Russian companies have been involved in the construction of six nuclear reactors in the Kudankulam nuclear power project in Tamil Nadu. Of these, unit 1 and unit 2 have been operating at total capacity. Unit 3 is still under construction.

### Potential of the energy partnership:

#### **Complementarity of India and Russia:**

- India has a comparatively low per capita energy usage as compared to the global average. India's per capita energy usage is poised to increase in the near future and its need for clean and affordable energy is bound to increase. With its abundant energy sources, Russia could be an ultimate long-term partner in the energy sector.
  - \* Russia has one of the world's largest shares of fossil energy resources with Russia's far-east in particular housing abundant fossil fuel resources.
- Thus there exists a complementarity wherein India is looking for energy resources to meet its energy demands while Russia is seeking long term markets for its energy resources.
- Also given India's large petrochemical refining capacity, it is emerging as a critical refining hub in Asia. Russia could sign long term contracts with these refineries and emerge as a major supplier of unprocessed fossil fuels to these refineries. This will allow Russia to monetize its fossil fuel resources while also allowing Indian refineries a constant source of fossil fuels
  - \* Currently, India has an installed capacity of more than 249.36 mtpa, with local companies planning to significantly expand the capacity by investing more than U.S.\$27 billion by 2021.

#### **Transformation of global energy framework:**

- India has been at the forefront of the transformation of global energy. India has been increasingly expanding towards petrochemicals to capture the additional value and diversify the sector while also trying to overcome supply chain risk in the segment.
- Russian companies have the potential to be long-term partners with India in aiding its energy transformation. Russia with its technological prowess can play an important role in helping India in this process.
- One of the examples of cooperation between the two countries in energy transformation is the joint venture between India's Reliance



Industries Ltd. and Russia's Sibur in Jamnagar, Gujarat. The venture now leads the first butyl and halogenated butyl rubber production facility in South Asia. This venture has emerged as a significant supplier of butyl rubber in the Indian market previously wholly dependent on imports. This comes as a boost to domestic tyre manufacturers in India. Also, it helps overcome supply chain risk by securing an uninterrupted supply of the butyl rubber market. This is of particular importance in the current pandemic, multiplying the risks of global supply chains disturbance.

- Notably, the venture has also been exporting its products to other countries as well and thus offers economic potential for Indian products.
- The project is a clear manifestation of the "Make in India" and "Atmanirbhar Bharat" initiatives, representing a practical example of technology transfer from Russia to India. The technology involved is not commercially available in the market and is the most advanced in terms of lower ecological footprint.

#### **Push towards greener sources of energy:**

- India has been leaning toward green energy sources with increasing emphasis on renewable energy resources. Russia, one of the key global players across the energy market, could emerge as an indispensable partner for such a transition.
  - \* Decarbonization of the energy sector is not only an environmental imperative but could also positively impact the country's growth trajectory. A recent Deloitte report has forecasted that India could gain U.S.\$11 trillion in economic value over the next 50 years by limiting rising global temperatures and realising its potential to 'export decarbonization'.
- India aims to install 175 GW of renewable energy by December 2022. This would require additional investments of about \$80 billion in renewables up to the year 2022. Also to meet its growing energy demand and succeed in green transformation, India needs approximately U.S.\$500 billion of investments in wind and solar infrastructure, grid expansion, and storage to reach the 450 GW capacity target by 2030.

#### **Russia can be a potential source of such investments.**

##### *Renewable, nuclear energy:*

- Nuclear energy currently accounts for a very small proportion of the renewable energy sector in India. India will have to ramp up its nuclear energy sources in the near future to meet its renewable energy targets.
  - \* Notably, India's nuclear power generation capacity of 6,780 MW may increase to 22,480

MW by 2031, contributing to the country's efforts to turn to green energy.

- Russia with its technological know-how and experience with respect to nuclear energy can pitch in this context. Russia has repeatedly expressed its willingness to build more nuclear reactors in India.
- India and Russia secure the potential of designing a nuclear reactor specifically for developing countries, which is a promising area of cooperation.

#### **Conclusion:**

- Given the huge potential for energy partnership between India and Russia, more efforts are needed to expand this energy cooperation between the two countries.
- This energy cooperation will not only help strengthen the bilateral relationship with mutual benefits to the two countries but also has the potential to provide an impetus to the global energy framework and benefit other countries as well.
  - \* As noted by the Indian Prime Minister at the 6th Eastern Economic Forum (EEF) in Russia's Vladivostok, "India-Russia energy partnership can help bring stability to the global energy market."

#### ***International Relations: Effect of policies and politics of developed and developing countries on India's interests/diaspora***

#### **14. Eye on Afghanistan, China to build military base in Tajikistan**

» Prelims: Central Asia geography

##### **Context**

- In the backdrop of growing terror threats originating from Afghanistan, China is planning to take control of existing military base and also construct a new military base near Tajikistan's border with Afghanistan

##### **Details**

- Tajikistan has granted approval for the construction of a new base which will be financed by China for a cost of \$10 million.
- It would be owned by Tajikistan's Rapid Reaction Group or Special Forces
  - \* However, the Tajikistan government has agreed to transfer full control of an existing facility that both sides have been using jointly.

##### *Location of New base*

- It will be located in the eastern Gorno-Badakhshan autonomous province near the Pamir Mountains, and Chinese troops will not be stationed there.



### Why is China building a new base?

- China's anxieties over Afghanistan becoming a breeding ground for growing terrorism relate to the separatist East Turkistan Islamic Movement, which has been blamed for attacks in China's Xinjiang province.
  - \* Beijing worries that extremists in Afghanistan could attach themselves to the East Turkistan cause.
- The base, once full control has been transferred, will become only the second known overseas Chinese security facility, after Djibouti near the Horn of Africa.

### Why is Tajikistan worried?

- The Tajik government has been taking a hard stance against the Taliban government in Afghanistan as Tajikistan is worried about the treatment of the Tajik minority
- The Taliban, in contrast, is mainly made up of the Pashtun group

### Russia

- Tajikistan is also home to Russia's largest military base abroad
  - \* Russia remains worried about terrorist infiltration in its Central Asian "backyard" following the Taliban's swift takeover of Afghanistan
  - \* The Russia-led Collective Security Treaty Organization (CSTO), a Eurasian defence alliance, has conducted a number of military drills within Central Asian nations that border Afghanistan.

### International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's Interests

## **15. India, Israel, UAE and U.S. launch quad forum**

- » Mains: Evolution of the new quad like grouping in west Asia; Significance and challenges for India

### Context:

- India, Israel, the United Arab Emirates and the United States have decided to launch a new quadrilateral economic forum.

### Details:

- The newly announced quadrilateral meeting between India, Israel, the UAE and the U.S. is a forum for economic cooperation for the moment.
- The quadrilateral builds on ongoing cooperation between the U.S., Israel and the UAE after the Abraham Accords in 2020, and the India, Israel and UAE cooperation that was subsequently launched.
  - \* Through this process, the Israeli government normalised relations with Morocco, Sudan and Bahrain.

- The grouping has decided to establish an international forum for economic cooperation, and specifically discussed possibilities for joint infrastructure projects.
- Deepening of maritime cooperation, enhancing connectivity, transport and digital infrastructure topped the agenda of discussion.
- The ministers discussed expanding economic and political cooperation in the Middle East and Asia, including through trade, combating climate change, energy cooperation, increasing maritime security and ways to counter the COVID-19 pandemic.
- However, the quadrilateral meeting did not discuss the issue of Palestine and resuming the "Middle East peace process", although the Joe Biden administration has expressed support for a "two-state solution", that is in line with India's broader position.

### Significance for India:

#### **Allow for a regional foreign policy:**

- The new grouping would allow India to adopt a regional foreign policy strategy towards West Asia, transcending its traditional approach of bilateralism wherein India had sought to build separate vibrant bilateral ties with the countries in the grouping.
- As in the Indo-Pacific, so in the Middle East, regional coalitions are bound to widen Delhi's reach and deepen its impact.

#### **Strategic significance of the grouping:**

- The strategic significance of the new grouping should not be missed out given that it excludes countries like China which has been seeking to deepen its influence in the region and has been trying to woo Israel and UAE even as the U.S. has sought to play only a limited role in the region.

#### **Significance of the relationship with the members:**

- India has been exhibiting a great degree of strategic alignment with the U.S. They form part of the Quad grouping with Australia and Japan, which have common concerns and shared interests on East Asia.
- Israel is one of India's top defence suppliers and it has been open to sharing critical weapon systems with India. This becomes critical given the security situation along India's borders. Also, Israel with its technological advancement in areas such as agriculture and water management could offer India the much needed technical know-how in these sectors.
- The UAE is vital for India's energy security given the fact that it accounts for a large share of fossil fuels supplies to India. UAE also hosts a substantial number of Indian diaspora and contributes to inward remittances into India. Given that UAE enjoys strategic influence in the

region and beyond including in countries like Pakistan, it could offer India some leverage while dealing with Pakistan.

#### **Potential benefits:**

- The new grouping's engagement in the areas of trade, energy, climate action and maritime security could yield rich dividends for member countries like India and also benefit the region.
- Combining India's scale with Israeli innovation and Emirati capital could produce immense benefits to all three countries. Adding American strategic support to this would see a powerful dynamic unfolding in the region.

#### **Challenges:**

- India should be mindful of the challenges that India could face in enhancing its relationship with the emerging bloc.
  - \* The regional rivalries have been intensifying between Shia dominated Iran and Sunni dominated countries like Saudi Arabia and UAE. This could intensify further and lead to conflicts. India should avoid getting stuck in such conflicts.

- \* Also although India, which sees itself aligned with the U.S. in the Indo-Pacific cannot risk degrading its relationship with Iran, India faces deepening insecurities in continental Asia after the American withdrawal from Afghanistan and it will have to work closely with countries such as Iran to deal with the challenges emanating from a post-American Afghanistan. Iran also contributes to India's energy security and is significant for India for connectivity to central Asia through the Chabahar port project.

#### **Conclusion:**

- It is perhaps too early to call the new minilateral with the US, UAE and Israel the "new Quad" for the Middle East. It will be a while before this grouping will find its feet and evolve.
- However, while pursuing the new grouping, India must retain strong ties with Iran even as it seeks to build a stronger regional partnership with the U.S.-Israel-UAE bloc.
- The new "Quad" in the Middle East is unlikely to be India's only new coalition in the region. It, in fact, provides a sensible template to pursue wide-ranging minilateral partnerships in the region.

# ART AND CULTURE

## *Art and Culture- Important terminologies related to Buddhism*

### 1. **Abhidhamma Day**

- » Prelims: Three pitakas of Buddhism- Authors, subject matter; Important terminology associated with Buddhism.
- » Mains: Buddhist literature and its significance
- The day marks the end of a three-month rainy retreat – Varshavaas or Vassa – for the Buddhist monks and nuns during which time they stay at one place and pray.
- Abhidhamma Day is when Lord Buddha came back to earth from heaven according to widely held beliefs.
- He is believed to have gone to heaven to teach Abhidhamma Pitaka (a basket of ultimate things) to his mother.
- The teaching took three months after which Buddha came back to Earth. His followers too mark the three-month time by staying at one place and praying.
- The ancient city of Kushinagar is the final resting place of Gautama Buddha, where he attained Mahaparinirvana after his death. It is among the most important pilgrim spots for Buddhists since ancient times.

## *Art and Culture - Festivals*

### 2. **Banni festival**

- » Prelims: Banni festival
- During the Devaragattu Banni festival, people from the Kurava and Boya communities engage in a fierce stick fight.
- It is celebrated in Kurnool district of Andhra Pradesh.
- The Banni festival is celebrated on the night of VijayaDasami to celebrate the victory of Lord Mala MalleswaraSwamy and Goddess Parvati Devi over demons Mani and Mallasura. Belief has it that Lord Siva took the form of Bhairava and killed two demons Mani and Malla using sticks. Devotees consider bloodshed during the Banni fight as a good omen.

## *Art and Culture - Awards*

### 3. **Dadasaheb Phalke Award**

- » Prelims: Dadasaheb Phalke awards- Associated field and recipients
- The DadasahebPhalke Awards is the highest award in cinema.
- It is annually presented at the National Film Awards ceremony by the Directorate of Film Festivals.
- TheawardisnamedafterDhundirajGovindPhalke, popularly known as DadasahebPhalke.
- DadasahebPhalke is regarded as the 'father of Indian cinema'.

#### Context:

- Vice President M Venkaiah Naidu presented the DadasahebPhalke Award to film actor Rajinikanth.

## *Art and Culture - Buddhism*

### 4. **Kushinagar now hub of Buddhist tourist circuit**

- » Prelims: Important places associated with Buddhism
- » Mains: Significance of Buddhism in helping India enhance international relations and also provide an impetus to its economy

#### What's in News?

The Prime Minister has inaugurated the Kushinagar International Airport in Uttar Pradesh, which will help connect key Buddhist pilgrimage sites. Diplomats from 12 countries where Buddhism is practised, including Mongolia, Myanmar, Vietnam, Cambodia, Thailand, Bhutan, Republic of Korea, Nepal and Japan, were also present.

- Kushinagar is the centre of the Buddhist circuit, which consists of pilgrimage sites at Lumbini, Sarnath and Gaya.
- Buddhist pilgrims consider Kushinagar a sacred site where, they believe, Gautama Buddha delivered his last sermon and attained 'Mahaparinirvana' or salvation.
  - \* It is believed to be the final resting place of Gautam Buddha.

### **Buddhist Circuit:**

- The Buddhist circuit is a route that follows in the footsteps of the Buddha from Lumbini in Nepal where he was born, through Bihar in India where he attained enlightenment, to Sarnath and Kushinagar in Uttar Pradesh in India, where he gave his first teachings and his final resting place.

### **Buddhist Sites:**

- Lumbini, Nepal – Siddhartha Gautama's (Buddha) birthplace.
- Kapilavastu, Uttar Pradesh – The place where Gautama Buddha spent his early years as Siddhartha.
- Bodh Gaya, Bihar – It is the place where Gautama Buddha attained Enlightenment.
- Sarnath, Varanasi, Uttar Pradesh – It is the place where Buddha gave his first sermon. This was his first teaching after having attained enlightenment.
- Rajgir, Bihar – This is where Buddha lived and taught. He preached his two most famous sermons here.
- Kausambi, Uttar Pradesh – Kausambi is the place where Lord Buddha stayed and preached in the sixth and ninth years of his attaining enlightenment.
- Shravasti, Uttar Pradesh – Buddha spent 24 Chaturmasas/rainy seasons here.
- Vaishali, Bihar – The place where Gautama Buddha held his last sermon.
- Kushinagar, Uttar Pradesh – The place where Gautama Buddha attained Parinirvana. Parinirvana is commonly used to refer to nirvana-after-death, which occurs upon the death of someone who has attained nirvana during his or her lifetime.

### **Art and Culture - Folk Art**

#### **5. Langa-Manganiyar folk art**

- » Prelims: Langas and Manganiyars folk art
- The Langas and Manganiyars are communities of Muslim folk musicians residing mostly in western Rajasthan's Jaisalmer and Barmer districts.
- The folk art practiced by these two communities includes ballads, folklore and songs.
- The major theme includes heroic ballads, romantic epic tales and the Sufi spiritual stories.

- The performances are in multiple languages and dialects including Marwari, Sindhi, Saraiki, Dhatti and Thareli.
- The folk art forms a vital part of Thar Desert's cultural landscape.

### **Context:**

- Efforts are on to document and digitize the folk art performances of the Langa-Manganiyar artistes.

### **Art and Culture - Architecture**

#### **6. Martand Sun Temple**

- » Prelims: Martand sun temple- style of architecture
- » Mains: Different styles of temple architecture in India
- It is a temple dedicated to Surya (Sun God) and was built in the 8th century CE by King Lalitaditya of the Karkota Dynasty.
- It is built in the Nagara style of temple architecture and is a protected monument under the Archaeological Survey of India.
- The temple turns out to be the largest example of a peristyle in Kashmir.
- It can be said it was an excellent specimen of Kashmiri architecture, which had blended the Gandharan, Gupta and Chinese forms of architecture.
- The temple was destroyed on the orders of Sikandar Shah Miri, ruler of the Shah Miri dynasty of Kashmir.

### **Art and Culture - Art forms**

#### **7. National Tribal Dance Festival**

- » Prelims:

### **Context:**

- National Tribal Dance Festival will take place in Raipur, Chhattisgarh.

### **Details**

- It is being organized under the tourism development plan of the Chhattisgarh government.



- The event will witness the participation of tribal dance groups from various states and union territories along with international participation from several countries portraying and celebrating their respective tribal folk culture.
- The dance performances will be held in two categories – ‘wedding ceremonies’ and ‘other prominent rituals’.
- 2019 was the first edition of the National Tribal Dance Festival.

#### Significance

- It will be an occasion for the people to get to know about the costumes, jewellery, crafts, designs, and food of the tribals.
- It will provide an opportunity to the tribal communities to share their experiences in various fields, including arts, music, film, health, tourism and food.
- Through this platform, they will also be able to share their thoughts about the developments in their community and plans.
- The works of tribes will be showcased and people will be able to get detailed information about their arts and crafts.

#### Art and Culture - Festivals

#### **8. Valmiki Jayanti**

- » Prelims: Valmiki- Adikavi
- ValmikiJayanti is observed on the birth anniversary of Maharishi Valmiki, the sage who wrote the Ramayana. The day is also observed as PragatDiwas.
- According to the Hindu lunar calendar, ValmikiJayanti is celebrated on the full moon day in the month of Ashwin.
- According to beliefs, Valmiki was a dacoit in his earlier years who transformed after a meeting with Narada.
- He decided to worship Lord Rama and sat in meditation for years. So intense was his meditation that an anthill (Valmika) was formed all over him, thus earning him the name ‘Valmiki’.
- Valmiki is also known as ‘AdiKavi’ (First Poet) since he is the author of the Ramayana or the AdiKavyam (the first epic poem).

#### Context:

- PM bows to Maharishi Valmiki on ValmikiJayanti.

#### Art and Culture - Art forms

#### **9. In Bengal's tribal villages, art fights COVID-19**

- » Prelims: Chhau dance, Paik dance and pattachitra- features and associated regions
- » Mains: Significance and potential of folk art forms

#### Chhau dance:

- Chhau dance is a semi classical Indian dance with martial and folk traditions, with origins in the Kalinga(Odisha) region from Mayurbhanj, and panned out to its variants in the states of West Bengal and Jharkhand.
- It is found in three styles named after the location where they are performed, i.e. the PuruliaChau of West Bengal, the SeraikellaChau of Jharkhand and the MayurbhanjChau of Odisha.
- It is a form of mask dance that uses vigorous movements.
- Chhau dance enacts episodes from epics including the Mahabharata and Ramayana, local folklore and abstract themes. Chhau dance is intimately connected to regional festivals, notably the spring festival ChaitraParva.
- In 2011, UNESCO inscribed Chhau in the representative list of intangible cultural heritage of humanity.

#### Paik dance:

- Paik is a martial folk dance. The dancers are armed with wooden spears and shields and show off their skills and agility in infantry like formations.

#### Patachitra:

- Pattachitra is a general term for traditional, cloth-based scroll painting, based in the eastern Indian states of Odisha and West Bengal.
- The paintings show a mix of classical and folk elements, with a bias towards the latter.

**Context:**

- A campaign is being organised by the community radio of Jadavpur University with support from UNICEF and being executed by the Kolkata-based Chalchitra Academy, a collective of artists to use the folk arts to spread awareness about COVID-19 and to promote vaccination.

# SCIENCE AND TECHNOLOGY

## *Science and Technology- Developments and their Applications and Effects in Everyday Life*

### 1. Nobel Prize in Chemistry

- » Prelims: Catalysts; asymmetric organocatalysis- Significance of the new method

#### Context:

- Germany's Benjamin List and U.S. based David MacMillan have won the Nobel Chemistry Prize for the year 2021 for their work in the development of new tool to build molecules.

#### Background:

##### **Catalysis:**

- Many research areas and industries are dependent on chemists' ability to construct molecules that can form elastic and durable materials, store energy in batteries or inhibit the progression of diseases. Such work requires catalysts.
- When two or more compounds react to form new compounds, the process is often aided by other chemicals that do not change themselves, but help speed up the reaction. Such chemicals are called catalysts.
- Till around 2000, only two kinds of chemicals were known to act as effective catalysts - heavier metals and enzymes.

#### Details:

- In 2000, the duo independent of each other, developed a third type of catalysis. It is called asymmetric organocatalysis and builds upon small organic molecules.

##### **Organocatalysis:**

- Both List and MacMillan independently developed organic catalysts, made up of carbon and other elements such as nitrogen, oxygen, phosphorus, and sulphur
- Organocatalysis has developed at an astounding speed since 2000. Benjamin List and David MacMillan remain leaders in the field, and have shown that organic catalysts can be used to drive multitudes of chemical reactions.

##### **Organic compounds:**

- Organic compounds are mostly naturally-occurring substances, built around a framework of carbon atoms and usually containing hydrogen, oxygen, nitrogen, sulphur, or phosphorus.
- Life-supporting chemicals like proteins, which are long chains of amino acids (carbon compounds containing nitrogen and oxygen) are organic. Enzymes are also proteins, and therefore, organic

compounds. These are responsible for many essential biochemical reactions.

##### **Asymmetric Organocatalysis:**

- The process called asymmetric organocatalysis, has made it much easier to produce asymmetric molecules - chemicals that exist in two versions, where one is a mirror image of the other.
- Chemists often just want one of these mirror images - particularly when producing medicines - but it has been difficult to find efficient methods for doing this. This is where the asymmetric organocatalysis comes into play. It is used for distinguishing and synthesizing molecules that are different from their mirror image.

#### Significance:

##### **Novel tool for molecule building:**

- Asymmetric organocatalysis offers a new and ingenious tool for molecule building which can allow the better control and acceleration of chemical reactions.
- Using the novel technique researchers can now more efficiently construct anything from new pharmaceuticals to molecules that can capture light in solar cells.

##### **Help overcome challenges associated with traditional catalysts:**

- The use of organocatalysis will help the overcome the challenges associated with the usage of traditional catalysts like metals and enzymes.
  - \* Heavier metals are expensive, difficult to mine, and toxic to humans and the environment. Also traces remain in the end product affecting the purity of compound like medicines. Also metals require an environment free of water and oxygen, which was difficult to ensure on an industrial scale.
  - \* Enzymes work best when water is used as a medium for the chemical reaction but that is not suitable for all kinds of chemical reactions.

##### **Environmentally friendly process:**

- Organocatalysts allow several steps in a production process to be performed in an unbroken sequence, considerably reducing waste in chemical manufacturing. This makes the process more environmentally friendly.
- Also they are cheaper and more sustainable than previously used metal catalysts.



### ***Science and Technology- Institutions/organizations in news***

#### **2. Indian Space Association**

- » Prelims: Indian space association
- » Mains: Space as a sunrise sector in India; Potential and measures being taken

##### **Context:**

- Indian Space Association (ISpA) launched.

##### **About Indian Space Association:**

- The Indian Space Association is an industry body representing the various stakeholders in the Indian space domain with members comprising the Indian Space Research Organisation (ISRO), Bharti Airtel, OneWeb, Tata Group's Nelco, L&T, MapMyIndia among others.
- Founder members are: ISRO, Larson & Toubro, Bharti Airtel, Nelco (Tata Group), OneWeb, Walchandnagar Industries, Ananth Technology Limited and Mapmyindia.
- This comes in the backdrop of the government opening up the space sector for private sector participation, and cleared the creation of a new entity, Indian National Space Promotion and Authorization Centre (IN-SPACe), to encourage private companies to use India's space infrastructure.
- According to the PM, India's approach to space reforms is based on four pillars:
  - \* Freedom to private sector in innovation
  - \* Role of government as an enabler
  - \* Making the youth future-ready
  - \* Seeing the space sector as a resource for the progress of common man
- The Indian Space Association will be headed by retired Lieutenant General AK Bhatt, who will be its Director General.
- The ISpA will undertake policy advocacy and engage with all stakeholders in the Indian space domain. It will also engage with the government and all its agencies.

- It is expected to make India technologically advanced, self-reliant and a leading player in the space sector.
- ISpA represents companies with advanced capabilities in space and satellite technologies that are charting the future of last-mile connectivity.
- It is represented by leading homegrown and global corporations with advanced space and satellite technology capabilities.
- Its tagline is "Bhumandal Se BrahmaandTak", meaning from "Earth to the Universe".

### ***Science and Technology- Developments and their Applications and Effects in Everyday Life***

#### **3. Nobel Prize in Physiology or Medicine**

- » Prelims: Nobel Prize in Medicine, 2021

##### **Context:**

- US scientists David Julius and Ardem Patapoutian have won the Nobel Medicine Prize for discoveries on receptors for temperature and touch. They will share the Nobel Prize cheque for 10 million Swedish kronor (\$1.1 million).

##### **Details:**

- Their work is focused on the field of somato sensation which explores the ability of organs such as the eyes, ears and skin to see, hear and feel.
  - \* The ability to sense heat, cold and touch is essential for survival.
  - \* It underpins our interaction with the world around us.
- Julius was recognised for his research using capsaicin (a compound from chilli peppers that induces a burning sensation) to identify which nerve sensors in the skin respond to heat.
  - \* The human body generates heat in response to inflammation, so the affected area can now be protected and be allowed to heal.
- Ardem Patapoutian's pioneering discovery was identifying the class of nerve sensors that respond to touch.

##### **Significance**

- These ground-breaking discoveries have facilitated the understanding of how heat, cold and mechanical force can initiate the nerve impulses that allow perception and adaption to the world.
- The duo's research is being used to develop treatments for a wide range of diseases and conditions, including chronic pain.



## *Science and Technology- Developments and their Applications and Effects in Everyday Life*

### 4. Nobel Prize in Physics

» Prelims: Nobel prize in physics, 2021

#### Context:

- U.S.-Japanese scientist Syukuro Manabe, Klaus Hasselmann of Germany and Giorgio Parisi of Italy have been announced as winners of the Nobel Physics Prize for their work on climate models and the understanding of physical systems.

#### Details:

- The Physics Nobel winners have developed tools to get a handle on complex systems.
- These models could show the effect of human activities on the climate.
- The climate model developed by Dr.Manabe showed how levels of carbon dioxide in the atmosphere corresponded to increased earth surface temperatures.
  - \* It is a classic work that showed, even in the 1960s, that the atmosphere would undergo another 2.3° C warming with the doubling of carbon dioxide content.
- Hasselmann had helped identify climate “fingerprints”- factors both natural and human activities contributing to the climate change process.
  - \* He identified a way of treating the random noise-like variations of the weather, devising a method to generate useful signals on the scale of the climate.
- The other half of the prize, to Giorgio Parisi from the Sapienza University of Rome, Italy, is for developing a method to sensibly study complex condensed matter systems called “spin glasses”
  - \* This is an outstanding feat in both mathematical and physical innovation.
  - \* The idea to break what is called “replica symmetry”, seen in a spin glass, in a consistent manner, which was his contribution, led to a method to study one of the simplest models of a genuinely complex system.
  - \* His work has helped solve problems in mathematics, biology and neuroscience; for instance, how memory is stored in networks of nerve cells.
- The climate science work by Syukuro and Hasselmann on the one hand and theoretical condensed matter physics work by Parisi on the other — is that both describe complex physical systems.

### Inference

- The Nobel committee hoped to send a message with its prize announcement as the rate of global warming has set off alarm bells around the world.
- The message seems to be to convey that the modelling of climate is solidly based on physics theory.
- Notable in this is the climate scientists’ work, which makes it obvious where science stands on the issue of global warming and estimates the human fingerprint on climate change.

## *Achievements of Indians in Science & Technology; Indigenization of Technology and Developing New Technology*

### 5. SC120-LOX

» Prelims: PSLV, GSLV-Mk II and GSLV-Mk III launch vehicles; Cryogenic propulsion technology-significance and challenges

HAL has delivered SC120-LOX semi-cryogenic tank to ISRO.

- It is the heaviest Semi-Cryogenic propellant tank ever fabricated by Hindustan Aeronautics Limited (HAL).
- The Semi Cryo-Liquid Oxygen (LOX) tank is a part of the SC120 stage intended for replacing the L110 stage in the existing Mk-III launch vehicle.
- This will enhance the payload capacity in the Mk-III launch vehicle.
- Therefore, it would especially play an important role in the upcoming Gaganyaan project.

#### Note:

- HAL has been associating with ISRO for India’s prestigious space programmes for five decades.
- HAL has delivered critical structures, tankages, satellite structures for the PSLV, GSLV-Mk II and GSLV-Mk III launch vehicles.
- In 2020, HAL had delivered the biggest ever cryogenic liquid hydrogen tank (C32-LH2), four meters in diameter and eight meters in length, much ahead of the contractual schedule.

#### Cryogenic Engine

- A cryogenic engine/ cryogenic stage is the last stage of space launch vehicles which makes use of Cryogenics.
- Cryogenics is the study of the production and behaviour of materials at extremely low temperatures (below -150 degree Centigrade) to lift and place the heavier objects in space.

- Cryogenic engine makes use of Liquid Oxygen (LOX) and Liquid Hydrogen (LH2) as propellants which liquefy at -183 deg C and -253 deg C respectively. LOX and LH2 are stored in their respective tanks.

#### Semi-Cryogenic Engine

- Unlike the cryogenic engine which uses a combination of liquid hydrogen (LH2) and liquid oxygen (LOX) as propellant, the semi-cryogenic engine replaces liquid hydrogen with refined kerosene (Isrosene as ISRO calls it).
  - \* Using refined kerosene as fuel has quite a few advantages:
    - » Kerosene combines with liquid oxygen provide a higher thrust to the rocket.
    - » Refined Kerosene occupies lesser space, making it possible to carry more propellant in a Semi Cryogenic engines fuel compartment.
    - » A semi cryogenic engine is more powerful, environment friendly and cost effective as compare to cryogenic engine.
- LOX will be retained as oxidiser.

### *Science and Technology- Developments and their Applications and Effects in Everyday Life*

#### **6. Zeolite oxygen concentrators: chemistry in three dimensions**

- » Prelims: Metal organic frameworks- applications; Zeolites- composition and applications

##### Metal-organic frameworks (MOFs):

- Metal-Organic Frameworks (MOFs) are a class of compounds consisting of metal ions or clusters coordinated to organic ligands to form one-, two-, or three-dimensional structures.
- They are a subclass of coordination polymers, with the special feature that they are often porous.
- The main advantages offered by this class of compounds include their stability, large surface area, controlled pore sizes, and tunable chemical environments.

##### Applications:

##### **Molecular sieve:**

- Frameworks can be designed to act as sieves in separating out molecules of a specified size. This makes it viable for usage in a wide variety of applications including sensing.

##### **Energy applications:**

- They can also be used for both storing energy (as capacitors) and for conducting it (along membranes in fuel cells).

##### **Catalysis:**

- It can be used in catalysis, where they can replace very expensive metals as catalysts.

##### **Medical field:**

- It can be used in drug-delivery wherein anti-cancer and other drugs with severe side effects can be trapped in the porous confines of MOFs, to be released in small and steady doses.

##### Zeolites:

- Zeolites are highly porous, 3-D meshes of silica and alumina. They also occur naturally, where volcanic outflows have met water.
- One notable application of synthetic Zeolite is in oxygen concentrators.
- Zeolite based oxygen concentrators use synthetic frameworks of silica and alumina with nanometer-size pores that are rigid and inflexible. Being highly porous, zeolite beads have a surface area of about 500 square meters per gram.
- At high pressures in the column, nitrogen enter into a tight embrace with the zeolite. Oxygen remains free, and is thus enriched.
  - \* Interaction between the negatively charged zeolite and the asymmetric nucleus of nitrogen causes it to be preferentially adsorbed on the surface of the zeolite.
- Lowering the pressure in the column releases the nitrogen, which is flushed out, and the cycle is repeated with fresh air to get enriched oxygen.

### *Science and Technology- Developments and their Applications and Effects in Everyday Life*

#### **7. A global player in solar power**

- » Prelims: Types of solar PV technologies-characteristic features

##### Context:

- The sharp decline in the prices of solar cells has resulted in cost competitiveness of solar energy with the more traditional thermal power. This has helped increase the uptake of solar energy in India.
- Also, the growing emphasis on renewable energy adoption as part of the climate action efforts to offset the emission of GHG from the more traditional fossil fuel-based energy plants has only increased the focus on solar energy.
- The article, complementing the rapid growth of solar projects in Tamil Nadu, analyzes the

evolving technologies in the solar voltaic sector and makes some recommendations for further growth in the sector.

### Types of solar PV technologies:

#### **First generation solar cells:**

- 'First-generation' solar cells use mono-crystalline and multi-crystalline silicon wafers. Crystalline silicon technologies currently occupy 95% of the global photovoltaic (PV) market with the predominance of mono-crystalline cells.
- While mono-crystalline silicon wafer is made from a single crystal of silicon (of higher purity), multi-crystalline silicon wafers are made by combining several fragments of silicon wafers.
- Mono-crystalline panels exhibit comparatively higher efficiencies. Thus they exhibit greater energy yield and lower cost of energy.
- Mono-crystalline panels are priced higher than multi-crystalline ones. However, the difference has been diminishing and is expected to attain parity soon.

#### *Bifacial solar cells:*

- Newer technologies incorporating crystalline silicon focus on bifacial solar cells, capable of harvesting energy from both sides of the panel.
- Bifacials can augment the power output by 10-20%.

#### **Second generation solar PVs:**

- The thin film technologies are classified as the 'second generation' of solar PVs.
- They are manufactured by depositing single or multiple layers of PV material on a substrate like plastic or glass. The PV material used includes semiconductors like Cadmium Telluride (CdTe) or crystalline silicon.
- Given their low thickness, light weight and flexibility they can be placed on electronic devices and vehicles thus helping augment the solar PV area.
- The lower efficiency of thin films as compared to that of crystalline silicon has affected their popularity and market share.

#### **Third generation solar cells:**

- New and upcoming solar cells are grouped as 'third generation' and contain technologies such as perovskite, nanocrystal and dye-sensitised solar cells.

#### *Perovskite:*

- A perovskite is a material that has the same crystal structure as the mineral calcium titanium oxide, the first-discovered perovskite crystal. A large number of different elements can be combined together to form perovskite structures. Using this compositional flexibility, scientists can design perovskite crystals to have a wide variety of physical, optical, and electrical characteristics.

- Perovskite crystals are being used in solar cells. Perovskites based solar cells have achieved cell efficiency of around 18%. They have the highest potential to replace silicon and disrupt the solar PV market, due to factors such as ease of manufacture, low production costs and potential for higher efficiencies.

#### *Nanocrystal and dye-sensitised solar cells:*

- Nanocrystal and dye-sensitised solar cells are variants of the thin film technology. These are in early stages for large-scale commercial deployment.
- Nanocrystal solar cells are solar cells based on a substrate with a coating of nanocrystals. The nanocrystals are typically based on silicon or CdTe and the substrates are generally silicon or various organic conductors.
- Dye-sensitized solar cells are another related approach, but in this case, the nano-structuring is part of the substrate.

#### *Quantum dot solar cells:*

- Quantum dot solar cells use Graphene Quantum-dots for solar PVs.
  - \* Graphene is made of a single layer of carbon atoms bonded together as hexagons.
- Quantum dot solar cells take advantage of quantum mechanical effects and offer high theoretical efficiency of 60% and also offer super capacitating quality.
  - \* A supercapacitor is a high-capacity capacitor with a capacitance value much higher than other capacitors, but with lower voltage limits, that bridges the gap between electrolytic capacitors and rechargeable batteries. It typically stores 10 to 100 times more energy per unit volume or mass than electrolytic capacitors, can accept and deliver charge much faster than batteries, and tolerates many more charge and discharge cycles than rechargeable batteries.

#### Other Improvements:

- While major attention has been on increasing the efficiency of solar PVs, considerable advances have also been made in developing solutions that better integrate solar PVs into the grid.
- These include weather forecasting and power output prediction systems; operation monitoring and control systems; and scheduling and optimisation systems. Additionally, automatic systems have been developed for the smooth resolution of output fluctuations. This becomes extremely relevant given the fluctuating nature of solar energy.

#### Recommendations:

- The article makes the following recommendations to further support and mainstream solar PV technology into India's energy market.

- \* A portion of the budget for renewable energy targets should be set aside exclusively for new technologies.
- \* Grants and subsidies must be provided for the adoption of new technologies. This will help mitigate the higher initial costs and help fast-track the adoption of new technologies in this ever-evolving solar PV sector.
- \* Sector-specific investment and incentives should be used to address gaps in research, development, and manufacturing capabilities in the solar sector.
- \* There should be ample and affordable funding opportunities for start-ups in this sector.
- \* There must be greater industry-academia collaborations in this sector to boost research and development.



# DEFENCE AND INTERNAL SECURITY

## *Defence Equipment*

### 1. **ABHYAS: High-speed Expendable Aerial Target (HEAT)**

» Prelims: ABHYAS-HEAT

#### Context:

- The Defence Research and Development Organisation (DRDO) conducted the successful flight test of the indigenously-designed Abhyas – High-speed Expendable Aerial Target (HEAT) in Odisha.

#### Details:

- Abhyas is designed and developed by DRDO's Aeronautical Development Establishment (ADE), Bengaluru.
- The vehicle can be used as an aerial target for the evaluation of various missile systems.
- The air vehicle is launched using twin under-slung boosters which provide the initial acceleration to the vehicle.
- It is powered by a gas turbine engine to sustain a long endurance flight at subsonic speed.
- The target aircraft is equipped with MEMS-based Inertial Navigation System (INS) for navigation along with the Flight Control Computer (FCC) for guidance and control.
- The vehicle is programmed for fully autonomous flight. The check-out of the air vehicle is done using a laptop-based Ground Control Station (GCS).
- This indigenous target aircraft, once developed, will meet the requirements of High-speed Expandable Aerial Targets (HEAT) for the Indian Armed Forces.

## *Miscellaneous*

### 2. **DRDO Awards**

- » Prelims: Technology Development Fund
- » Mains: Initiatives to promote indigenization of Indian defence sector

#### Context:

- Raksha Mantri gave away DRDO Dare to Dream 2.0 & Young Scientists awards.

#### Dare to Dream 2.0:

- Dare to Dream is DRDO's pan-India contest to promote Indian academicians, individuals and start-ups to develop emerging defence and aerospace technologies/systems.

- DRDO provides technical and financial support to the winners for realisation of their ideas under the Technology Development Fund (TDF) scheme.

- \* The TDF Scheme extends financial support and expertise to upgrade existing products/ systems, processes and its applications by reducing production costs, improving functionality and quality by promoting Make in India, and the development of futuristic technologies with defence applications.
- \* The Scheme enlists requirements of Service Headquarters of upgrading products/ systems and futuristic defence technologies as Projects for which eligible stakeholders can apply through this platform.

## *Military Exercises*

### 3. **Exercise Cambrian Patrol**

» Prelims: Exercise Cambrian Patrol

#### Context:

- Indian Army team won the gold medal in Exercise Cambrian Patrol organised at Brecon, Wales (UK).

#### Details:

- Ex Cambrian Patrol is referred to as the 'Olympics of Military Patrolling' among militaries in the world.
- Organised by the UK Army, it is considered the ultimate test of human endurance and team spirit.
- The Indian Army team participated in the event and competed against a total of 96 teams which included 17 international teams representing Special Forces and prestigious regiments from around the world.
- During the exercise, teams were assessed for their performance under harsh terrain and inclement cold weather conditions which presented various challenges in addition to the complex real-world situations painted to them so as to assess their reactions in combat settings.

## *Security challenges - Terrorism*

### 4. **Grim turn**

- » Mains: Surge in targeted killings in Kashmir, Recommendations

#### Context:

- Civilians killed in Kashmir.

### Responsibility for the killings

- A militant group called The Resistance Front (TRF) has claimed the responsibility.
- It is an amalgam of old groups that have long been present in the Valley, such as Lashkar-e-Toiba, Jaish-e-Mohammed and Hizb-ul-Mujahideen.

### Why is it difficult to locate them?

- Most of them would fall in the category of "overground" militants, or "hybrid" as the security establishment now refers to them because they may be only partially active.
- This is one reason why the security establishment is finding it harder to locate them.

### Surge in target killings in Kashmir

- It might be in the backdrop of increasing tourist influx and planned industrial investment in Kashmir where the Centre is promoting a raft of development schemes.
- The administration is encouraging the Pandits to return.
  - \* Some allege it is also because of fear and phobia of demographic change.
- A nine-week-long outreach of the Centre in J&K where Union Ministers are visiting remote districts, including those closer to the LoC, is underway.
- Strict directives were issued to unfurl the national flag in all government buildings, including schools, on August 15.
- There is an aggressive drive too to punish government staff suspected to be separatist sympathisers.
- People suspected of being "collaborators" of the post-2019 set-up in J&K are being killed.
- Therefore, civilians are soft targets for the terrorists in this milieu to spread fear among these communities.

### Tackling Violence

- Indian authorities should take urgent steps to protect minority communities (Pandits and the Sikhs) that are being targeted by armed groups in Jammu and Kashmir
- Various Political forces and civil society should stand in solidarity with the victims.
- Civil society must take the initiative to foster communal amity and mobilize people across communities against hatred.
- Political dialogue must be initiated, Statehood should be restored as originally envisaged during the process of dilution, press and political freedoms must be reinstated, thus creating an environment to isolate and tackle terror in the region

### Conclusion

- No society can tolerate such violence. The J&K administration should thus engage with political parties and civil society organizations.

### Defence Equipment

#### **5. Igla-S**

- » Prelims: Igla-S
- "Igla-S" is a man-portable surface-to-air missile system.
- Igla-S constitutes a short range air defence system.
- This type of air defense system is designed to defeat all types of visible fixed- and rotary-winged aircraft on head-on and in pursuit courses as well as small aerial targets like cruise missiles.
- The Indian Army had contracted a small number of Igla-S systems from Russia under emergency procurement through the Vice-Chiefs emergency financial powers and deliveries are expected soon.

### Defence Equipment

#### **6. Indian Coast Guard Ship 'Sarthak'**

- » Prelims: Sarthak
- 'Sarthak' is an indigenously built Indian Coast Guard Ship.
- ICGS Sarthak will be based at Porbandar in Gujarat and operate on India's Western Seaboard under the Operational and Administrative Control of the Commander, Coast Guard Region (Northwest).
- ICGS Sarthak is 4th in the series of five offshore patrol vessels (OPVs) being built by Goa Shipyard Limited for the Coast Guard.
- The ship is fitted with state-of-the-art equipment, machinery, sensors and weapons which enable it to function as a command platform and undertake the mandated Coast Guard charter of duties including search & rescue, combating maritime crimes and preserving & protecting the marine environment.
- It can attain a maximum speed of 26 knots.

### Defence - International Co-operation

#### **7. Indo-Pacific Regional Dialogue (IPRD)**

- » Prelims: Indo-Pacific Regional Dialogue
- » Mains: Maritime strategy for India- Imperatives and challenges

- The Indo-Pacific Regional Dialogue (IPRD) is the apex international annual conference of the Indian Navy, and is the principal manifestation of the navy's engagement at the strategic level.
- It was first held in 2018.
- It is organised by the National Maritime Foundation and is an annual event.
- The aim of each successive edition of the IPRD is to review both opportunities and challenges that arise within the Indo-Pacific.
- IPRD 2021 will focus on eight specific sub-themes under the broad theme of "Evolution in Maritime Strategy during the 21st Century: Imperatives, Challenges, and, Way Ahead".

#### **National Maritime Foundation (NMF)**

- It was established in 2005 as the nation's first maritime think-tank for conducting independent and policy-relevant research on 'matters maritime'.
- It is an autonomous think-tank but its intellectual and organizational development is supported by the Ministry of Defence and the Indian Navy.

### **Defence Equipment**

#### **8. Long-Range Bomb (LRB)**

- » Prelims: Long range bomb

#### **Context:**

- DRDO & IAF jointly flight tested Long-Range Bomb successfully.

#### **About the LR Bomb:**

- The LR Bomb has been designed and developed by Research Centre Imarat (RCI), a DRDO laboratory located at Hyderabad in coordination with other DRDO laboratories.
- The bomb is part of the class of weapons with a range of 50 to 150 km.

#### **Significance:**

- The successful tests can prove to be a force multiplier and major boost to the Indian Armed Forces
- From the Kargil war to Operation Bandar in Balakot in 2019, India in the past has been using Israeli laser-guided bombs. The successful test of the LR Bomb makes India capable of staying well within its territory and hitting enemy targets at 100 kilometres with high accuracy.

### **Defence Equipment**

#### **9. TUSHIL – P1135.6**

- » Prelims: Tushil; Frigates

#### **Context:**

- The 7th frigate of P1135.6 class for the Indian Navy was launched at Yantar shipyard in Kaliningrad, Russia.

#### **Background:**

- The Indian and Russian governments had in 2016 signed an agreement to construct four additional P1135.6 class ships -- two each in Russia and India.
- The construction of these ships is based on Indian Navy's specific requirements to meet the entire spectrum of naval warfare in all three dimensions of Air, Surface and Sub-surface.

#### **About the ships:**

- The ships with a potent combination of state-of-the-art Indian and Russian Weapons and Sensors are equipped to operate in Littoral and Blue waters, both as a single unit and as consort in a naval task force.
- They feature "stealth technology" in terms of low radar and under water noise signatures.
- These ships are being equipped with major Indian supplied equipment such as Surface to Surface Missiles, Sonar system, Surface Surveillance Radar, Communication Suite and ASW system along with Russian Surface to Air Missiles and gun mounts.
- The 7th frigate of the series has been named 'Tushil' which means 'protector shield' in Sanskrit.

### **Defence Equipment**

#### **10. UAVs boost Army watch in eastern sector**

- » Prelims: Heron UAVs

#### **Context:**

- The Army Aviation has recently got control of Heron-I unmanned aerial vehicles (UAV) in the eastern sector.

#### **Heron-I Unmanned Aerial Vehicles (UAV)**

- It is a Medium-Altitude Long-Endurance (MALE) Unmanned Air Vehicle (UAV) system primarily designed to perform strategic reconnaissance and surveillance operations.
- It was developed by the Malat division of Israel Aerospace Industries.
- These are not equipped with offensive weapons and are confined to being used in reconnaissance missions.

### Details:

- This brings all aviation assets under one roof and augments its ability to keep an eye on Chinese activities across the border.
- In the last few years, the Army and Air Force have significantly upgraded their defences in the eastern sector, including induction of new equipment, as part of efforts to match China's build-up and infrastructure development on its side of the Line of Actual Control (LAC). There has also been a major impetus to infrastructure development in the region.
  - \* During the standoff in eastern Ladakh, the Army Aviation had seen a significant increase in the employment of helicopters along the northern borders.
- The Army Aviation Brigade at Missamari, Assam was raised in March 2021 to enable better command and control of aviation resources.
  - \* The Brigade operates the Cheetah and Advanced Light Helicopter (ALH) Dhruv utility helicopters, Rudra weaponised ALH and Heron-I UAVs.

### Significance:

- There are certain advantages of UAVs or Remotely Piloted Aircraft (RPA) being with Army Aviation.
  - \* Heron-I unmanned aerial vehicles (UAV) were earlier with the Artillery.
- All aerial assets under one umbrella allows optimised employment of RPAs during operations in conjunction with other aviation assets.
- In the future battlefield, manned and unmanned aircraft teaming will reap huge dividends.

## Defence and Internal Security-Cyberspace

### 11. The outlines of a national security policy

- » Prelims: Different forms of cyber attacks-associated terminology
- » Mains: Threat posed by cyber warfare and the need for a robust defence policy to counter the threat

### Context:

- Humans have innovated multiple tools and systems to protect their countries.
  - \* From bow and arrow to guns, from jets to nuclear bombs, countries have brought massive changes to their security architecture.
- One area where smaller countries can hit a larger neighbour is by making use of cyberspace.
  - \* Geography, population and GDP won't matter much but expertise does.

- The article discusses Cyber Warfare and Cyber technology as part of National defence policy.

### Tools used in cyber war attacks

- It includes hacking, denial of service attacks, eavesdropping, identity theft, sabotage, insertion of rogue code.
- Use of drones, robots, satellites and advanced computers.
- Expansion can be further seen in the artificial intelligence and nanotechnology domains.

### Example

- Cyber-attack from China.
- Studies point out that Malware introduced into the Indian electric grid may have hit Mumbai leading to a power crisis in the city for a few hours.

### Inference

- The 21st century is not just about the mobilization of weapons or the size of the armed forces of men or overt and covert operations.
- It is about electronic operations from a remote centre beyond the front lines of ground forces, it is cyber warfare.
- Thus tracking the cyber warfare centres of the adversary and preparing for bilateral conflicts in the 21st century, will need a new national security policy.

### Measures to be taken

#### 1. Objectives:

- Indian companies, including critical infrastructure providers such as power grids, ports and radar systems, lack the IT infrastructure to prevent hacking from hostile state and non-state actors.
- India has to prioritize its assets to be protected and should be in a position to identify the culprits.

#### 2. Priorities:

- National security priorities will require new departments for supporting several frontiers of innovation and technologies such as hydrogen fuel cells, desalination of seawater, thorium for nuclear technology, anti-computer viruses, and new immunity-creating medicines.
- This focus on new priorities requires a change in analytical thinking. Reforms will have to be introduced in the education system making science and mathematics education compulsory.
- Every citizen will have to be alerted to new remote-controlled military technology and be ready for it.

#### 3. Strategy:

- The strategy required for this new national security policy will be to anticipate our enemies in many dimensions.



- India should develop and practise offensive cyber capabilities when needed as part of the strategy to secure its interests in cyberspace.
- China continues to pose cyber security threats to India. It is time we devise a new strategy.

### **Conclusion**

- India should thus enhance its cyberspace capabilities, not delay the formulation of its cyber strategy as it is a serious national security risk.
- Deterrence in cyberspace, like in other domains, is based on the projection of an image. India's image as a cyber-power is in need of an urgent makeover.

## ***Security challenges - Drug trafficking***

### **12. Should the NDPS Act be amended?**

- » Prelims: Provisions under NDPS act
- » Mains: Countering the threat posed by drug addiction

### **Context:**

- The Union Ministry of Social Justice and Empowerment has proposed certain changes to some provisions of the Narcotic Drugs and Psychotropic Substances (NDPS) Act of 1985.

### **Background:**

#### **Lacunae in NDPS act of 1985:**

- The Act which was brought in 1985 is not in line with the latest developments with respect to drug regulation in other countries.
- The provisions of the NDPS act are very stringent. The Act as of now prescribes jail for everyone — the end user and the drug supplier.
- The principle of first arrest and then investigate under the NDPS act is liable for misuse since the onus is on the accused to prove their innocence under cases of this act.

### **Details:**

- One of the recommendations of the Ministry is to decriminalise the possession of narcotic drugs in smaller quantities for personal purposes. It instead proposes treating them as victims.
- This is welcome as this allows for distinction between the drug peddler and the end user. The person using it in smaller quantities for personal use cannot be bracketed with the person producing narcotic drugs.
- The recommendations proposes that certain provisions of the act could be changed to ensure a reformative approach towards addicts

- The Ministry proposes to refer persons possessing drugs in smaller quantities to government-run rehabilitation centres instead of awarding them jail terms and imposing fines

### **Challenges in enforcing recommendations:**

- The proposal to send persons to rehabilitation centres is good on paper but the lack of infrastructure may affect its actual implementation.
  - \* There is the lack of adequate number of de-addiction centre and counsellors or psychiatrists.

### **Recommendations:**

- There is the need to address the root or underlying causes for drug addiction. This will require a thorough understanding of why and how people are getting addicted to narcotic drugs. One has to ascertain why different sections of the society, be it street children or youngsters from rich families, are getting addicted to drugs. There is the need to redefine and redesign the law so as to tackle what acts as a trigger for drug usage.
- The government could also study some of the best practices in the world. The community-led approach followed in Iceland could be replicated in India wherein the Iceland government tackled the issue right from the school level in creating awareness to tackling drug trafficking.
- The use of whiteners, glue, painting chemicals, etc, as drugs in children could be restricted via proper restrictions on their sale and distribution.
- Parents and teachers should play a pivotal role in educating the children against the practice of drug usage.
- The government should allocate more money for the national fund for rehabilitation to help transform drug addicts.

## ***Security Agencies***

### **13. Border Security Force**

- » Prelims: Central Armed Police Force- Powers and jurisdictions
- » Mains: Enhancement of operational jurisdiction of BSF- arguments both in favour of and against the move

### **Context:**

- The Union Ministry of Home Affairs has recently enhanced the Jurisdiction and operational limits of the Border Security Force (BSF) in states where it guards the international border (Punjab, West Bengal and Assam).

## **Background:**

### **Border Security Force (BSF):**

- The BSF is a central armed police force (CAPF) that functions under the Union government.
  - \* The Ministry of Home Affairs issues all orders pertaining to the BSF and other CAPFs such as the Central Reserve Police Force (CRPF), Sashastra Seema Bal (SSB), Indo Tibetan Border Police (ITBP), Central Industrial Security Force (CISF).
- It was raised in 1965 in the aftermath of the India-Pakistan war.
- India is a Union of States and under One Border One Force policy, the BSF is deployed along the Pakistan and Bangladesh borders. It is deployed on Indo-Pakistan International Border, Indo-Bangladesh International Border and Line of Control (LoC) along with Indian Army. It has been termed as the First Line of Defence of Indian Territories.
- It is also deployed in areas affected by Left Wing Extremism (LWE) and is routinely deployed for election and other law and order duties on the request of State governments.
- It also undertakes defensive actions during wartime to free up Indian Army troops for offensive operations
- According to the BSF Act, 1968, passed by Parliament and the rules framed in 1969, the BSF has been assigned three primary tasks while deployed along the borders — promote a sense of security among the people living in the border area; prevent trans-border crimes/unauthorised entry into or exit from the territory of India and prevent smuggling and any other illegal activity.
  - \* The MHA has given powers to the BSF personnel in border areas under the Customs Act, the Passport Act, the Narcotics Drugs and Psychotropic Substances Act, the Code of Criminal Procedure (CrPC), Registration of Foreigners Act, 1939, the Central Excises and Salt Act, 1944, the Foreigners Act, 1946, and the Foreign Exchange Regulation Act, 1947.
  - \* o The violations against which the BSF carries out search and seizure include smuggling of narcotics, prohibited items, illegal entry of foreigners and offences punishable under any other Central Act.

## **Details:**

- The Ministry of Home Affairs (MHA), through a notification in the Gazette of India has enhanced the “arrest, search and seize” powers of the Border Security Force (BSF) up to 50 km from the international boundary within Assam, West Bengal and Punjab. The BSF’s powers — which include arrest, search and seizure — were limited to up to 15 km in these states.

- In Gujarat, the limit was reduced from the existing 80 km to 50 km. In Rajasthan, the 50-km limit remains unchanged.
- The notification replaces a 2014 order under the BSF Act, 1968, which also empowers the force to conduct counter-insurgency operation in Manipur, Mizoram, Tripura, Nagaland and Meghalaya.
- Its jurisdiction has been extended only in respect of the powers it enjoys under Criminal Procedure Code (CrPC), Passport (Entry into India) Act, 1920 and the Passport Act, 1967. BSF currently has powers to arrest and search under these laws.
- It also has powers to arrest, search and seize under the NDPS Act, Arms Act, Customs Act and certain other laws. Its jurisdiction under these laws has not been changed, meaning its powers under these will continue to be only up to 15 km inside the border in Punjab, Assam and West Bengal, and will remain as far as 80 km in Gujarat.

### **Significance of the move:**

- Notably, the BSF before this notification had different jurisdictions in different states. The fresh notification will help end this anomaly.
- The move will bring in much needed uniformity in the BSF’s jurisdiction and also help increase operational efficiency and effectiveness of BSF in curbing trans-border crimes. The new notification gives the BSF a legal teeth to conduct the searches in nearby areas and not be constrained by territorial limit.
- Also the move was also necessitated due to increasing instances of drones dropping weapons and drugs in Jammu and Kashmir and Punjab. With enhanced territorial limits in States, the border agency is set to expand its operations and also undertake independent pre-emptive search operations, especially at a time when the borders remain tumultuous.

### **Arguments against the move:**

- The move has been criticised by the Punjab and West Bengal governments, which have called it an attack on the federal structure and an attempt to curtail the rights of the state police. The states argument has been that law and order and policing is a state subject and enhancing BSF’s jurisdiction infringes upon powers of the state government.
  - \* According to the Seventh Schedule of the Constitution, policing is a State subject.
- Also given that policing in the hinterland is not the role of a border guarding force, rather it would weaken the capacity of the Border Security Force in discharging its primary duty of guarding the international border.

**Union Government's line of argument:**

- The union government has argued that it is only exercising the powers under the Border Security Force Act of 1968 to enhance the jurisdiction of BSF.
- Also notably, the BSF does not have police powers; after apprehending a suspect it can only conduct "preliminary questioning" and has to hand over a seized consignment or the suspect to the local police within 24 hours. It does not have powers to prosecute crime suspects. Thus it is in line with police being a State subject under the Constitution.
- Public Order vs Security of State: Though public order, which connotes public peace, safety and tranquility, is primarily the responsibility of a State Government, when there is a serious public disorder which threatens the security or defence of the State or of the country itself, the situation becomes a matter of concern for the Union Government also and thus the Union government can take necessary measures in that direction.
- Existing constitutional provisions: Article 355 of the Indian Constitution notes that It shall be the duty of the Union to protect every State against external aggression and internal disturbance and to ensure that the government of every State is carried on in accordance with the provisions of this Constitution

# ENVIRONMENT AND ECOLOGY

## *Species in news - Fauna*

### 1. Amur falcons

- » Prelims: Amur falcon; Doyang lake; Convention on migratory species

#### What's in News?

- The arrival of the migratory Amur Falcons to Tamenglong district of Manipur for the annual stopover.



- Amur falcons visit the district every year from breeding grounds in China and Russia before beginning their onward voyage to Africa for the winter.
- They are the world's longest travelling raptors that start travelling with the onset of winters.
- They get their name from the Amur River that forms the border between Russia and China.
- Doyang Lake in Nagaland is a famous roosting site for the species during its migration.
- Nagaland is called the falcon capital of the world.

#### Conservation Status:

- IUCN Red List Status – Least Concerned.
- It is protected under the Indian Wildlife Protection Act, 1972, and the Convention on Migratory Species, to which India is a signatory.
- Also, the hunting of the bird is punishable under the Manipur Wildlife (Protection) Act, 1972 and could lead to three years of imprisonment and a fine of ₹25,000.

## *Initiatives in news*

### 2. Dust Control & Management Cells

- » Prelims: Commission for Air Quality Management, Dust control on roads

#### Context:

- Dust Control & Management Cells set up in National Capital Region in pursuant to directions by Commission of Air Quality.

#### Details:

- The Commission for Air Quality Management (CAQM) has issued directions to all road owning/maintaining/road construction agencies of the State Governments of Uttar Pradesh, Rajasthan, Haryana and GNCTD to set up Dust Control & Management Cells in their respective states.
- The Cell will regularly monitor the compliance of road dust control measures by the authorities concerned and will also keep track of the progress of measures undertaken.
- Apart from this, exhaustive reports prepared on a monthly basis by the cell will help in the fight against dust pollution more systematically.
- CAQM has formulated a 10-point dust monitoring parameter in this regard.
- This parameter involves a variety of measures that needs to be strictly adopted by the Cells including:
  - \* optimum utilization of road sweeping machines,
  - \* scientific disposal of dust collected in designated sites/landfills,
  - \* water sprinkling to suppress dust especially after mechanized sweeping,
  - \* augmentation of mechanized sweeping and sprinkling capacity,
  - \* proper management of roads to ensure potholes-free roads,
  - \* laying or repairing roads in a manner which extensively supports mechanized sweeping,
  - \* conversion of non-paved roadsides into paved one or into a green area,
  - \* greening of central verges,
  - \* laying cemented roads over bituminous roads especially in industrial areas and,
  - \* identification of hotspots of road dust and target-specific implementation of road dust control measures.



## Species in news-Fauna

### **3. Glossy ibis**

- » Prelims: glossy ibis; Maguri Motapung beel
- The glossy ibis (*Plegadis falcinellus*) is a water bird.
- IUCN Red List category: Least Concerned.
- According to State of India's Birds 2020 released at the 13th Conference of Parties of the Convention on the Conservation of Migratory Species of Wild Animals, this species has shown an increase in numbers over the past 25 years.
- This migratory bird travels to Maguri Motapung Beel in Assam.

## Ecological Changes

### **4. Himachal Pradesh getting less snow: Study**

- » Mains: Snow loss- Causes and impacts

#### Context:

- A recent study conducted jointly by the State Centre on Climate Change and Space Applications Centre (ISRO) Ahmedabad, using Advanced Wide Field Sensor (AWiFS) satellite data has revealed that all major river basins including Satluj, Ravi, Chenab, and Beas have witnessed an overall decrease of 18.5% in area under snow in 2020-21 winters in comparison to 2019-20.

#### Identifiable Causes of the loss of Snow:

##### Natural Cause

- The prime reason is the changes in the global climate pattern which has led to the reduction in the precipitation trend.
- The average temperature has also risen in the region faster than the peninsular region.
- On average relatively more moisture is being carried towards the Himalayas. But there is a lack of conditions for sub-zero temperature, hence snowfall is declining as global warming has led to a rise in temperature.

##### Man-Made Cause

- Unsustainable rapid deforestation
- Unregulated construction activities
- Increase in air and soil pollution in the region.

#### Impact of Loss of Snow Cover

- In Himachal Pradesh, about one-third of the geographical area remains under thick snow cover during the winter season.
- The snow cover helps in controlling the accumulation and ablations patterns of the glaciated regions.

- Major rivers such as Chenab, Beas, Parvati, Baspa, Spiti, Ravi, Satluj and their perennial tributaries originating from the Himalayas depend upon the seasonal snow cover for their discharge dependability.
- The spatial distribution of snow ensures sustainable measurement of the hydrological table at the basin.

#### Recommendations:

- Developed countries with legacy emissions need to effect deep emission cuts. Developing nations should also commit themselves to steeper emissions cuts based on the promise of support from developed countries.
- The developing countries should be supported adequately in their climate action endeavours in the form of easy access to low carbon technologies through technology transfer and adequate funding for mitigation and adaptation.

## Climate Action

### **5. Like Minded Developing Countries (LMDC)**

- » Prelims: LMDC
- » Mains: Major demands by LMDC with respect to climate action

#### Context:

- India participated in the Like Minded Developing Countries (LMDC) ministerial meeting.

#### Details:

- The meeting was titled 'Preparations for COP 26 on Climate Change – Expectations and Challenges'.
- The Union Minister for Environment Forest and Climate Change called for the rapid reduction of emissions by developed countries in this decade, especially considering that the remaining global carbon budget is meagre and will be exhausted within this decade at the current rate of global emissions.
- He also noted that the commitments of carbon neutrality and to raise ambitions in nationally determined contributions should be in line with climate justice and principles of equity and common but differentiated responsibilities and respective capabilities (CBDR-RC).

#### About Like Minded Developing Countries (LMDC):

- The 'Like Minded Developing Countries (LMDC)' is a bloc of 25 nations that have come together ahead of the UN climate change conference known as the 26th Conference of Parties (COP26) (to be hosted in Glasgow in Oct-Nov 2021).

- The LMDC is a formal negotiating group that includes China, India, Malaysia and Indonesia.
- The LMDC countries are slated to meet again on the margins of the Glasgow meet and could emerge as a voice for developing countries at Glasgow.
- The group is significant in that it could push back against what are seen as unfair demands put forth by developed countries at the climate conference.
- The LMDC said in a statement, 'During their own industrialization phase, the developed countries have overused their domestic carbon space and used those of developing countries. Disregarding this historical cumulative and per capita cumulative carbon emissions by not reflecting it in their current emission reduction pledges under the Paris Agreement and by promoting distant net zero targets for themselves amount to furthering carbon injustice and inequity'.

### ***Environmental conservation efforts- Initiatives in news***

#### **6. Plastic waste recycling targets**

- » Prelims: Extended Producer Responsibility
- » Mains: Initiatives being taken up to tackle the plastic challenge

##### **Context:**

The Environment Ministry has issued plastic waste recycling targets.

##### **Details:**

- The draft rules mandate producers of plastic packaging material to collect all of their produce by 2024 and ensure that a minimum percentage of it be recycled as well as used in subsequent supply.
- It has also specified a system whereby makers and users of plastic packaging could collect certificates — called Extended Producer Responsibility (EPR) certificates — and trade in them.
- Only a fraction of plastic that cannot be recycled — such as multi-layered multi-material plastics — would be eligible to be sent for end-of-life disposal such as road construction, waste to energy, waste to oil and cement kilns.
- Only methods prescribed by the Central Pollution Control Board (CPCB) would be permitted for their disposal.
- Producers of plastic would be obliged to declare to the government, via a centralised website, how much plastic they produce annually.
  - \* Companies would have to collect at least 35% of the target in 2021-22, 70% by 2022-23 and 100% by 2024.

\* In 2024, a minimum of 50% of the rigid plastic (category 1) would have to be recycled as would 30% of their category 2 and 3 plastic.

\* Every year would see progressively higher targets and after 2026-27, 80% of their category 1 and 60% of the other two categories would need to be recycled.

- If entities cannot fulfil their obligations, they would on a "case by case basis" be permitted to buy certificates making up for their shortfall from organisations that have used recycled content in excess of their obligation.
- Non-compliance would not invite a traditional fine. Instead, an "environmental compensation" would be levied.

##### **Plastic packaging Categories:**

- Category 1 is "rigid" plastic;
- Category 2 is "flexible plastic packaging of single layer or multilayer (more than one layer with different types of plastic), plastic sheets and covers made of plastic sheet, carry bags (including carry bags made of compostable plastics), plastic sachet or pouches;
- Category 3 is called multilayered plastic packaging, which has at least one layer of plastic and at least one layer of material other than plastic.

### ***Species in News - Fauna***

#### **7. Spot-billed pelicans**

- » Prelims: Atapaka and Nelapattu bird sanctuary
- Pelicans are a genus of large water birds that make up the family Pelecanidae. They are characterized by a long beak and a large throat pouch.
- The spot-billed pelican (*Pelecanus philippensis*) or grey pelican, is a member of the pelican family.
- It breeds in southern Asia from southern Iran across India east to Indonesia.
- IUCN Red List category: Near Threatened
- Atapaka bird sanctuary in Andhra Pradesh is identified as the world's largest home for spot-billed pelicans.
- Nelapattu bird sanctuary is considered one of the biggest habitats for some hundreds of pelicans..

### ***Conservation Efforts - Initiatives in news***

#### **8. Vision Plan (2021-2031) for Indian Zoos**

- » Prelims: Central Zoo Authority

### Context:

- Union Minister for Environment, Forest and Climate Change released the Vision Plan (2021-2031) for Indian Zoos.

### About the Vision Plan:

- The vision plan is aimed at upgrading Indian zoos and strengthening the Central Zoo Authority (CZA).
- The vision document is committed to making CZA and Indian zoos a greater force for conservation by providing unparalleled animal care, cutting edge research, and immersive visitor experiences that strike meaningful chords with people of all ages.
- The exhaustive 10 years' vision plan has been arrived at after a very stringent data mining and stakeholder consultative process and is expected to give a direction towards ex-situ conservation approaches in India.

### About Central Zoo Authority:

- The Central Zoo Authority is the statutory regulatory body for zoos in India.
- It was established in 1992.
- The main objective of the Authority is to complement and strengthen the national effort in conservation of the rich biodiversity of the country, particularly the fauna as per the National Zoo Policy, 1998.
- It also enforces minimum standards and norms for the upkeep and healthcare of animals in Indian zoos.
- Every zoo in the country is required to obtain recognition from CZA for its operation.
- It can also de-recognise zoos.

## Miscellaneous

### **9. World Animal Day**

- » Prelims: Animal welfare Board of India

#### Context:

- World Animal Day celebrated by the Animal Welfare Board of India (AWBI) on 4th October, 2021.

#### About World Animal Day:

- 4th October is celebrated globally as World Animal Day.
- The Day is celebrated every year on 4 October internationally, on the feast day of Francis of Assisi, the patron saint of animals, to educate humans about how their actions impact animals and create awareness about the protection of animals all over the world.

- The first celebration of World Animal Day was observed in March 1925.
- This Day is observed globally to raise the status of animals in order to improve welfare standards.
- The celebration of World Animal Day unites the animal welfare movement, mobilizing it into a global force to make the world a better place for all animals.
- The theme for World Animal Day 2021 is "Forests and Livelihoods: Sustaining People and Planet."

### About Animal Welfare Board of India:

- The Animal Welfare Board of India is a statutory advisory body on Animal Welfare laws and promotes animal welfare in the country.
- It was established in 1962 under Section 4 of the Prevention of Cruelty to Animals Act, 1960.
- The Board was started under the stewardship of Late Smt. Rukmini Devi Arundale, well-known humanitarian.
- Headquartered at Ballabhgarh, Haryana, AWBI ensures that animal welfare laws in the country are diligently followed.
- It also provides grants to Animal Welfare Organizations and advises the Government of India on animal welfare issues.

## Conservation Efforts - Initiatives in news

### **10. 'Wetlands of India' Portal**

- » Prelims: Wetlands of India

#### Context:

- 'Wetlands of India' Portal launched.

#### Details:

- The portal is a dynamic system for processing information and making it available to the stakeholders in an efficient and accessible manner.
- The portal also hosts capacity building material, data repository, videos and information for students.
- A dashboard for each State and UT has been developed to access the portal and populate it with information on wetlands in their administration.
- The portal would be populated by the different States and UTs and additional features may be added in the coming months.
- Citizens can also register themselves and upload wetland related pictures across different themes.

## Species in News

### **11. A tiny plant that can 'digest' low density plastic sheets**

- » Prelims: Uronema africanum Borge microalga
- » Mains: Plastic pollution- concerns and innovative methods to address this challenge

#### Context:

- Researchers from University of Madras and Presidency College, Chennai, have isolated an alga that breaks down low density polyethylene.

#### Background:

##### **Plastic pollution:**

- Around 5.6 million metric tonnes of plastic waste is generated each year in India. Worryingly, only 60% of the plastic used in India is collected and recycled. Hence a large proportion of Plastic waste is continuing to accumulate and leading to adverse environmental impacts.
- The usual means of disposal of plastic waste involves incineration, land-filling and recycling. These methods have limitations and also sometimes produce side-effects that are hazardous to the environment.
- Hence there has been growing emphasis on biodegradation methods that are safe and environment friendly.

#### Details:

- The alga identified is microalga Uronema africanum Borge. This is a species of microalgae that is commonly found in Africa, Asia and Europe.
- The alga used for the study has been harvested from a lake in Chennai.
- The microalga was found to produce enzymes, hormones, toxins such as cyanotoxins and some polysaccharides which were able to slowly degrade polyethylene into monomers which will not have harmful effect in the atmosphere.
  - \* Low-density polyethylene is highly resistant to degradation.
- The researchers are planning to collaborate with industry to take up this technology in to a pilot scale and finally large-scale study.

#### Significance:

- The development gains significance given that the identified algae could be used as an agent of biodegradation of plastic sheets and thus it offers a solution to Plastic pollution in India.

## Environmental Pollution and Degradation

### **12. Toxic firecrackers**

- » Prelims: Green crackers; PESO ; Major pollutants released by crackers

#### Context:

- The Supreme Court has come down heavily on the firecracker industry after revelation from the CBI enquiry pointing to rampant violation of the SC ban on the use of toxic ingredients in firecrackers.

#### Background:

##### **Pollution caused by fire crackers:**

- Firecrackers use different metal salts to get different colours. Barium compounds produce green light and Strontium and Lithium salts produce red light.
- The burning of firecrackers resulting in emission of particles and gases is a major source of air pollution. It gives rise to higher levels of Aluminium, Barium, Potassium, Sulphur, Iron and Strontium in the air.
- High levels of such elements in the air affect the health of people and animals.

##### **Previous Supreme Court Ruling:**

- Given the air and sound pollution caused by fire crackers, there were petitions filed in the judiciary calling for a total ban on firecrackers.
- However taking a balanced view the Supreme Court had ruled out a full ban on firecrackers and issued orders stipulating that only reduced emission and green crackers be allowed, with tight restrictions on timings when they could be burst.

##### **Green Crackers:**

- The Council of Scientific and Industrial Research, through its National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur, had come out with firecrackers that have lower particulate matter emission.
- These crackers are named as Safe Water Releaser (SWAS- Low Potassium Nitrate and Sulphur use), Safe Thermite Cracker (STAR- low Sulphur and Potassium Nitrate) and Safe Minimal Aluminium (SAFAL- Aluminium use is low).
- These have the unique property of releasing water vapour and/or air as dust suppressant and dilutant for gaseous emissions.

#### Details:

- The Supreme Court has found six major fireworks manufacturers violating orders requiring them not to use prohibited chemicals such as Barium salts and to label the firecrackers in compliance with the law.



\* The green crackers are to be identified using unique QR codes.

- Firecrackers were also not labelled with information on the person responsible for legal compliance, as ordered by the court.
- The Petroleum and Explosives Safety Organisation should certify the composition of fireworks as free from banned chemicals.

### ***Conservation Efforts - Initiatives in News***

#### **13. Rs. 445 cr. given to discoms to prevent jumbo deaths**

- » Prelims: Elephant reserves in India
- » Mains: Mortality of elephants due to electrocution; recommendations

#### ***What's in News?***

The Odisha government has provided ₹445.75 crore to distribution companies to increase the ground clearance of electrical networks and replace bare conductors in elephant corridors and movement areas.

- The aim is to achieve zero casualties of elephants.
- It is aimed at preventing elephant deaths due to electrocution.
- Many interposing poles have been erected and circuit bare conductors replaced by covered ones.

#### ***Elephant Corridor:***

- An elephant corridor is a stretch of land, sometimes forested, which connects large habitats with the elephant population and also forms a channel for the movement of elephants to and from the habitats.
- This movement is important as it increases the survival and birth rates of the animal.
- Threats to elephant corridors are developmental work like construction, roadways, railways, coal and iron ore mining, etc.

### ***Climate Action***

#### **14. Tackling the climate crisis**

- » Prelims: Global Climate Risk Index
- » Mains: Climate action measures being taken up in India; Recommendations

#### ***Background:***

#### **The threat posed by climate change:**

- According to the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report, the past decade (2011-2020) was warmer by 1.09°C than the period from 1850 to 1900, and the 1.5°C global warming threshold set as per the

Paris Climate agreement is likely to be breached very soon.

- This is likely to lead to severe weather events leading to large scale death and destruction. This will derail the global development process.
- Countries like India are likely to face more intense heat waves, heavy monsoons and rise in weather extremes in the future.

\* The Global Climate Risk Index (2021) ranked India the seventh-most affected country by weather extremes.

- Such a scenario necessitates immediate climate action. Mitigation measures are required to reduce GHG emissions and limit global warming. Also given the escalating climatic risks, there is an urgency to adopt suitable adaptation strategies as well.

#### ***Climate action measures being taken in India:***

#### **Mitigation:**

- India has been taking critical mitigation commitments for reducing emission intensity and enhancing renewable capacity.
  - \* NITI Aayog in collaboration with US-based Rocky Mountain Institute (RMI) and RMI India, has launched a campaign named Shoonya, to promote zero-pollution delivery vehicles by working with consumers and industry. The campaign will promote the adoption of Electric Vehicles (EVs) in the urban deliveries segment and create consumer awareness about the health, environmental and economic benefits of electric vehicles.
  - \* The National Mission for Enhanced Energy Efficiency announced as part of India's National Action plan for climate change aims for a reduction in energy and carbon intensity of the economy in a bid for more sustainable economic growth.
  - \* India aims to have 175 GWs by 2022 and 450 GWs of renewable energy capacity by 2030.
  - \* India has set ambitious solar energy missions. As part of its National Solar Mission, India has set itself a target of 100 GW of solar power by 2022.
  - \* In a bid to adopt more environmentally sustainable energy sources India has also announced the setting up of a green hydrogen mission.

#### **Adaptation:**

- While taking necessary steps towards mitigation measures, given India's vulnerability to climate change India has accorded equal importance to adaptation measures as well and has taken the following measures.

- \* The National Mission on Sustainable Habitat, Water Mission, Mission for Sustaining Himalayan Ecosystem and the Mission for Sustainable Agriculture all aim at streamlining adaptation measures in critical sectors.

- » National Innovations on Climate Resilient Agriculture launched by the Indian Council of Agricultural Research aims at strategic research, technology demonstrations and capacity building to make the critical agricultural sector more resilient to climate changes.

- The National Adaptation Fund for Climate Change (NAFCC) has been established to meet the cost of adaptation to climate change for the State and Union Territories of India that are particularly vulnerable to the adverse effects of climate change.
  - » NABARD has been designated as the National Implementing Entity (NIE) for the implementation of adaptation projects under NAFCC by Govt. of India.

#### **Need for a more robust adaptation strategy:**

- While laudable measures are being taken, adaptation planning needs to go beyond a business-as-usual approach given the existential threat posed by climate change. Climate change poses grave threats to water, food and livelihood security as is evident from the increasing instances of severe climate events leading to rising poverty levels and increased instances of distress migrations.
- A breakthrough on adaptation and resilience actions is needed to save hard-earned developmental gains and adjust to new climate conditions.

#### **Recommendations:**

- Proactive and timely need-based adaptation measures are the need of the hour. To strengthen adaptation and resilience, India can consider the following measures.

#### **Improving forecasting capability:**

- Given the criticality of early warning systems in reducing the vulnerability to climate disasters, India should focus on improving its forecasting capability with an emphasis on high-quality meteorological data.
- Premier research institutes must be roped in to develop regional climate projections for robust risk assessments.

#### **Nature-based solutions:**

- Nature-based solutions should be promoted. There is a need to protect mangroves and forests to address climate-related risks by blending traditional knowledge with scientific evidence.

- \* Nature-based solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

#### **Decentralized approach:**

- Responses to climate change vary from place to place as there are differences in production systems, agro-climatic and socio-economic conditions. This necessitates the need to encourage local and non-state actors to actively participate in adaptation measures against climate change.
- Also, adaptation planning requires governance at different levels to understand, plan, coordinate, integrate and act to reduce vulnerability and exposure.
- Such an approach will help systematically understand micro-level sensitivities, plan resource allocation, and design responses to serve at different levels of intensities of climate hazards.
- Such an approach will also allow for continuous monitoring and evaluation which will help in ensuring effective feedback mechanisms for any possible mid-course correction.

#### **Integrated approach:**

- A development-centric approach that aligns climate change, food security, and livelihood perspectives and takes into consideration regional specificities is inevitable in the present scenario.

#### **Involving the private sector:**

- A more collaborative approach towards climate change adaptation involving the public and private sectors is crucial.
- There is the need to encourage private sector participation for investment in adaptation technologies and for designing and implementing innovative climate services and solutions in areas such as agriculture, health, infrastructure, insurance and risk management.
- The government should work towards promoting new business and climate service opportunities across various economic sectors to incentivize private participation. This will not only speed up adaptation measures but also help open up green growth opportunities in the Indian economy.

#### **Promoting sustainable products and their usage:**

- India should work towards the development of well-functioning markets for environmentally friendly products and disseminate them for the desired behavioural change.

### Other measures:

- India should focus on creating resilient infrastructural assets, diversifying the economy and enhancing the adaptive capacity of the most vulnerable sections of the society through appropriate social protection schemes.

### Conservation Efforts - Initiatives in news

#### 15. China launches biodiversity fund

- » Prelims: Kunming biodiversity fund; '30 by 30' agenda

#### What's in News?

- China has pledged to inject \$233 million into a new fund to protect biodiversity in developing countries, despite disagreements among major donors on the initiative.
- Beijing is the world's biggest polluter.
- China has sought to play a more prominent role internationally in biodiversity conservation in recent years.
- A summit on safeguarding plants, animals and ecosystems was organised in the Chinese city of Kunming.
- The summit aims to establish a new accord setting out targets for 2030 and 2050.
- China will take the lead in establishing the Kunming biodiversity fund with a capital contribution of 1.5 billion yuan (\$233 million) to support the cause of biodiversity conservation in developing countries.

#### '30 by 30' agenda:

- A key proposal being debated at the conference is the "30 by 30" agenda that would afford 30% of the Earth's land and oceans protected status by 2030.
- According to a UN report, global spending to protect and restore nature needs to triple this decade to about \$350 billion annually by 2030 and \$536 billion by 2050 to meet this target.
- However, some rich country donors believe that a new fund for conservation is not necessary as the United Nations' Global Environment Facility helps developing nations finance green projects.

### Climate action

#### 16. Deconstructing climate finance

- » Mains: Major concerns regarding climate finance

#### Context:

- Media reports have highlighted that developed countries are soon going to meet the target of providing \$100 billion annually in climate finance to developing countries by 2025.

- The Organisation for Economic Co-operation and Development (OECD) has also claimed that climate finance provided by developed countries had reached \$78.9 billion in 2018.
- The article evaluates if the claims are genuine or are erroneous.

#### Flawed claims

##### 1. Finances from Developed to the Developing Countries

- Awarding finances from the developed to the developing countries should be from public sources either in the form of grants or as concessional loans.
- However, the OECD report makes it clear that the public finance component amounted to only \$62.2 billion in 2018, with bilateral funding of about \$32.7 billion and \$29.2 billion through multilateral institutions.
- Concern
  - \* Of the public finance component, loans comprise 74%, while grants make up only 20%. The report does not say how much of the total loan component of \$46.3 billion is concessional.
  - \* From 2016 to 2018, 20% of bilateral loans, 76% of loans provided by multilateral development banks and 46% of loans provided by multilateral climate funds were non-concessional.
  - \* Between 2013 and 2018, the share of loans has continued to rise, while the share of grants decreased.

#### Inference

- The numbers clearly reveal a higher proportion of finances were conferred as loans and not as grants increasing the debt burden of many low-income countries.
- ##### 2. Inflating Climate Finances
- The OECD reports are also criticized for bloating climate finances.
  - It had included development projects such as health and education that only notionally target climate action.
- ##### 3. Biennial Reports
- The 2018 Biennial Assessment of UNFCCC's Standing Committee on Finance reports that on average, developed countries provided only \$26 billion per year as climate-specific finance between 2011-2016.
  - This rose to an average of \$36.2 billion in 2017-18.

#### 4. Oxfam report

- The Oxfam report on climate finance takes into picture the estimate of how much climate finance is actually targeting climate action, discounts for grant equivalence and thus takes into perspective the outcome of such investments.
  - In contrast to the OECD report, Oxfam estimates that in 2017-18, out of an average of \$59.5 billion of public climate finance reported by developed countries, the climate-specific net assistance ranged only between \$19 and \$22.5 billion per year.
- #### 5. U.S. climate funding
- U.S. President Joe Biden has promised to double US international climate finance by 2024.
    - \* However, it is the US congress that has to decide on the quantum of finances and the US in the past has also broken commitments.

#### Example

- \* It had promised \$3 billion to the Green Climate Fund (GCF) under President Barack Obama, but delivered only \$1 billion before President Donald Trump withdrew U.S. support from the GCF.
  - Even if the finances are mobilized it will be mostly from the Private sector and such investments from the private sector will be based on benefits they wish to derive and not as per the priorities and needs of the developing countries.
- #### 6. Adaptation and Mitigation

- Climate change mitigation means avoiding and reducing emissions of heat-trapping greenhouse gases into the atmosphere to prevent the planet from warming to more extreme temperatures.
  - Climate change adaptation means altering our behaviour, systems, and—in some cases—ways of life to protect our families, our economies, and the environment in which we live from the impacts of climate change.

- Climate finance has also remained tilted towards mitigation, despite the repeated calls for maintaining a balance between adaptation and mitigation.
- Currently available adaptation finance is significantly lower than the needs expressed in the Nationally Determined Contributions submitted by developing countries.

#### Conclusion

- Developing countries should continue to put pressure on developed countries to live up to their promises and commitments as the history of climate negotiations has not been in their favor.

### Environmental Conservation Efforts

#### 17. 'Shift focus to demand management of water'

- » Prelims: Mihir shah committee
- » Mains: Threat of water insecurity in India; Recommendations

#### Context:

- Mihir Shah, Chairman of the 11-member drafting committee of India's new water policy in an interview has shared some insights on the upcoming National Water Policy.
  - \* India previously had a National Water Policy in 1987, 2002, 2012.

#### Background:

##### **Threat of Water insecurity in India:**

- As per available scientific estimates, if the current pattern of water demand continues in India, about half of the national demand for water will remain unmet by 2030.
  - \* Notably while India supports around 16% of the global population, India has access to only around 4% of the global fresh water resources.
- The current context of climate change leading to changing patterns and intensity of precipitation is adding to the grave crisis of water facing the country.
- The deteriorating water quality is also adding to water stress in India.

#### Recommendations:

- There is the urgent need to take very serious cognisance of the grave crisis of water facing the country.
- There is the need for greater emphasis on agility, resilience and flexibility in water management, so that there could be an adequate response to the heightened uncertainty and unpredictability of the future. There is the need for a radical change in the approach to water management.

##### **Demand side management:**

- India should shift focus from endlessly increasing supply of water towards measures for demand-management.
- This could involve measures such as diversifying of cropping pattern to include less water-intensive crops, lowering the industrial water footprint by reducing fresh water use and shifting to recycled water and the use of treated wastewater for all non-potable uses, such as flushing, fire protection, vehicle washing, landscaping etc in cities.

##### **Improving supply side efficiency:**

- There should be sufficient focus on supply of water through rejuvenation of catchment



areas, which needs to be incentivised through compensation for ecosystem services in the upstream, mountainous regions.

- There should be renewed thrust on local rainwater harvesting. Protection and revival of traditional local water bodies in both rural and urban areas needs to be prioritized. This would form part of urban blue-green infrastructure for improved water levels and quality, as also flood mitigation.

#### **Nature based solutions:**

- There is the need to adopt 'nature-based solutions' for storage, supply of water in India given their low cost characteristic and also the environmental sustainability of such an approach.
- There is mounting evidence across the globe in favour of "nature-based solutions" for water storage and supply.

#### **Differential water pricing:**

- Economic services (like industrial and commercial use) must be charged at a rate where the O&M (Operation and Management) costs and part of the capital cost would be the basis for the water service fees. Concessional rates should be provided for vulnerable social sections.

### ***Environmental Degradation and Ecological Changes***

#### **18. 'Mumbai lost 40% green cover between 1991 and 2018'**

- » Prelims: Urban heat island effect

##### **Context:**

According to a recent study, Mumbai lost 40% green cover between 1991 and 2018.

##### **Details:**

- Between 1991 and 2018, Mumbai lost:
  - \* 81% of its open land (barren spaces without any vegetation)
  - \* 40% green cover (forests & scrublands)
  - \* approximately 30% of its water bodies (lakes, ponds, floodplains).
- During the same period, the built-up area (areas developed upon) rose by 66%.
- The study concludes that the city witnessed a 2-degree Celsius average temperature rise across 27 years.
- Declining green cover as a result of the large-scale transformation of the green cover into built-up land for the infrastructural development has given rise to Urban Heat Island effect in the city.

#### **Urban Heat Island effect:**

- The extreme heat that one experiences while strolling through any urban landscape is caused by the Urban Heat Island effect.
- It is a micro-climatic phenomenon.
- Urban Heat Island is a concept where the urban area experiences warmer conditions than its surrounding regions.
- This is due to a number of causes, the most prominent being the usage of materials such as concrete.
- Other factors contributing to the Urban Heat Island effect are population density, and the density of the land-use area.
- This will not only deteriorate the urban thermal environment but also increase the serious risks to health for city dwellers.

### ***Climate Action***

#### **19. The carbon markets conundrum at COP26**

- » Prelims: Article 6 of the Paris Agreement; Clean Development mechanism

##### **Context:**

- The article analyses the issues and concerns surrounding Article 6 of the Paris Agreement.

##### **Article 6**

- Article 6 of the Paris Agreement aims at promoting integrated, holistic and balanced approaches that will assist governments in implementing their Nationally Determined Contributions (NDCs) through voluntary international cooperation.
- Under this mechanism, countries that struggle to meet their emissions-reduction targets under their national climate plans or want to pursue less expensive emissions cuts, can purchase emissions reductions from other nations that have already cut their emissions more than the amount they had pledged.

##### **Clean Development Mechanism (CDM)**

- It is a market-based approach to reducing emissions of the greenhouse gases that contribute to climate change.
- It was created to make it easier for the industrialized countries that are parties to the Kyoto Protocol to meet their emissions-reduction targets, while contributing to development in poorer nations at the same time.
- Under the CDM, when a project (such as a wind farm) in a developing nation results in an overall fall in emissions it will receive 'carbon credits', called Certified Emission Reductions (CERs) based on the amount of emissions that have been reduced.

- An industrialized country (or a company based there) that needs to reduce its emissions can buy these CERs instead of investing in emissions reductions at home. The advantage of this is that more emissions can be reduced at a lower cost than by investing in a project in an industrialized nation.

### Developing countries

- India, China and Brazil, gained significantly under the Clean Development Mechanism (CDM) of the Kyoto Protocol.

### **A look at numbers**

- India recorded 1,703 projects under the CDM which is the second-highest in the world.
- Total carbon credits known as Certified Emission Reductions (CERs) issued for these projects are around 255 million which corresponds to an overall anticipated inflow of approximately U.S. \$2.55 billion in the country at a conservative price of U.S. \$10 per CER.
- Therefore, logically, India has a lot to gain from a thriving carbon market.

### **Issue Area**

- The Paris Agreement introduced new changes which will have a significant impact on the developing world.
  - \* The Paris agreement sets mitigation targets for the developing countries which were not present under the Kyoto Protocol.
  - \* Developing countries are faced with the dilemma of either selling their carbon credits in return for lucrative foreign investment flows or using these credits to achieve their own mitigation targets.
  - \* This has made Article 6 a highly sensitive issue that requires careful balancing of interests and expectations.

### What should be debated?

The three critical issues that would be hotly debated in Article 6 negotiating rooms are CDM Transition, Accounting rules and Share of Proceeds to the Adaptation Fund.

#### **1. CDM transition:**

- Credits to the developing countries were issued under the due diligence of UNFCCC.
- Therefore, the Article 6 mechanism should honour the previous decisions and allow for a smooth transition of these projects and credits to ensure not only the viability of these projects but also inspire trust among the private investors in the UNFCCC decision-making process.

#### **Concerns**

- Some countries have questioned the process of awarding such credits and raised doubts about the environmental integrity of these credits.
- There is greater acceptance for the transition of projects/activities, the same is not the case for the transition of credits.
- If the decision regarding the transition of CDM is not favourable, it could lead to a loss of billions of dollars worth of potential revenue to India alone.

#### **Recommendation**

- A new supervisory body can be formed under the Paris Agreement to re-examine the validity and rigour of such credits.

### **2. Accounting rules**

#### **Concerns**

- Article 6.4 mechanism is meant to incentivize the private sector and public entities to undertake mitigation activities for sustainable development.
- Under this mechanism, a country can purchase emission reductions from public and private entities of the host country and use them to meet its NDC targets.

#### **Inference**

- This may not be adjusted against the host country's NDC targets, instead, they are additional efforts by the Private and Public entities to mitigate greenhouse gas emissions, and in fact, raise global climate ambition.
- This means, not all mitigation actions fall within the purview of its NDC.

#### **Recommendation**

- Being a developing country, India does not need to undertake economy-wide emission reduction targets at this stage of its development.
- Therefore, it can significantly gain from the market mechanism under Article 6.4 by selling emission reductions that lie outside

### **3. Share of Proceeds (SOP) to the Adaptation Fund**

#### **Article 6.2**

- Article 6.2 provides an accounting framework for international cooperation, such as linking the emissions-trading schemes of two or more countries.

- It also allows for the international transfer of carbon credits between countries.

#### Article 6.4

- It establishes a central UN mechanism to trade credits from emissions reductions generated through specific projects.
- For example, country A could pay for country B to build a wind farm instead of a coal plant. Emissions are reduced, country B benefits from the clean energy and country A gets credit for the reductions.

#### Difference of opinion between developed and developing

- Developing countries emphasize that the SOP must be uniformly applied to Articles 6.2 and 6.4 to fund adaptation, developed countries want to restrict its application to Article 6.4.
- This would disincentivize the Article 6.4 mechanism and limit voluntary cooperation to the cooperative approaches under Article 6.2 favoured by developed countries.

### Conclusion

- The carbon markets allow the developing countries to generate revenue and the developed countries to emit greenhouse gases in excess of the set threshold.
- Climate justice demands that developing countries get access to their fair share of global carbon space.
- Therefore, developing countries are nudged to take greater mitigation responsibilities, a facilitative carbon market mechanism that respects the principles enshrined in UNFCCC, which may accelerate their transition to low carbon development and would be a win-win solution for all countries.

### Environmental Degradation and Ecological Changes- Impact and Concerns

#### 20. Development that is mindful of nature

- » Prelims: Gadgil and Kasturirangan committee on western ghats
- » Mains: Relation between land use pattern changes and the increasing vulnerability to natural disasters
- The article talks about the need for sustainable development with minimal effect on the environment in Kerala that has been a victim of environmental disaster yet again.

#### Context:

- Unusually heavy rains have caused landslides in Kottayam and Idukki in Kerala.
- Flash floods, mudslides and landslides have been reported in most districts located between central and southern Kerala. Some bridges and a number of roads have been washed away.

In the backdrop of these environmental disasters and consequent loss of life, there is a dire need for a serious review of the land-use pattern in Kerala.

#### Land-use pattern in Kerala:

- Historically, most of the settlements were concentrated in the coastal plain, the adjoining lowlands and parts of the midlands.
- At present, this scenario has altered with significant land-use change across topographic boundaries.
- Population growth, agricultural expansion, economic growth, infrastructure development — particularly road construction — and intra-State migration have all led to the settlement of the highlands.
- Kerala is experiencing high growth of residential buildings.
  - \* The Census records that during the decade between 2001 and 2011, the population grew by 5% whereas the number of houses grew by 19.9%.
- With a population density of 860 persons/sq. km against an all-India average of 368 persons/sq. km (Census 2011), Kerala experiences very high pressure on the land.

#### Concerns:

- The rapid pace of construction has serious implications for the geo-environment.
  - \* Not only in terms of the locations for housing the settlements but also the demand for construction materials is altering the landscape in the state.
- The basin characteristics of all rivers have been altered.
  - \* It has resulted in gross disturbance of the character of the terrain evolved through weathering and formation of soil under natural vegetation cover.
  - \* Consequently, the water-absorbing capacity of the river catchment is lost, and has contributed to increasing surface run-off and reduction in groundwater recharge.
- Road construction in hilly areas has created conditions conducive to landslides.
  - \* Construction on hill slopes prone to disintegration during heavy rain is a threat not only to those who choose to live there but also to those who are in the path of the debris that gets dislodged in a landslide.

- \* In parts of the State, the hills have been overbuilt, posing a danger to life.
- Extremely complicated rules for registration of purchase and sale of property in Kerala are not matched by due diligence of building plans.
- While the idea of a construction-free Coastal Regulation Zone, instituted by the Government of India and applicable to the entire country, is fairly well recognised in the State, the Government of Kerala has not been proactive in enforcing similar regulation.
- \* The hesitancy towards the implementation of the recommendations by the Western Ghats Ecology Expert Panel, commonly known as the Gadgil Committee, on protection of the Western Ghats is the best example of this.

### **Way Forward:**

#### *Review of two projects:*

The most recent landslide in Kerala should lead the government to immediately review two major projects with the potential to lower ecological security.

1. The Silver Line project – a light railway connecting the two extremities of the State.
  - Its potential to usurp agricultural land and cause ecological disturbance is well known.
  - The claim that it is vital to the development of the State is debatable.
  - Kerala's deficit is less with respect to transportation than what it is to power generation, urban infrastructure and a well-trained workforce.
2. Widening of the highway taking place in parts of the State.
  - Entirely under the authority of the Government of India, this has involved mass felling of trees and the removal of habitation on both sides of the road.
  - The loss of vegetation and tree cover is sure to have an impact on local climate and water retention, impacting its availability.
  - It is not known whether the Government of India has consulted the people affected or just used the principle of eminent domain to have them evicted.
    - \* Eminent domain power is regarded as an inherent power of the State to take private property for a public purpose. This power depends on the superior domain of the State over all the property within its boundaries.

#### *Technical expertise needed:*

- Kerala's longitudinal topographic grain combined with its east-west-running rivers gives rise to an alternating ridge-valley landform.

- \* Given this feature, the construction of roads or any structure with a north-south alignment involves cutting across the valleys and lowlands, impacting natural drainage and overall landscape ecology.
- \* Therefore, development interventions should be cautious and ecologically sensitive to avoid unwarranted consequences and to be sustainable.
- Evaluating ecosystem services lost in a developmental overdrive is a difficult exercise. Economic consequences of the actions towards nature are immediately not known. However, there is a need to acknowledge this.
- Technical expertise is needed when re-engineering the earth.
  - \* Earth scientists, independent public policy experts, elected representatives and citizens from the affected areas must be duly consulted before taking up such developmental projects.

Rushing through developmental projects in the face of intimations from nature through disasters such as landslides would be a case of utter ignorance. Projects such as the new railway lines and highway widening should be undertaken only after public hearings open to citizens.

### **Environmental degradation and ecological changes - Impact and concerns**

#### **21. Restless mountains, shattered lives**

- » Prelims: Gadgil and Kasturirangan committee on western ghats
- » Mains: Significance of Western Ghats; Threat to its ecological integrity

#### **Context:**

- Flash floods and landslides in the aftermath of heavy rains in the hilly regions of the Western Ghats in central Kerala districts of Kottayam, Idukki and Pathanamthitta has resulted in the loss of lives and property.

#### **Western Ghats:**

- The Western Ghats is a mountain chain that runs almost parallel to India's western coast. It runs to a length of 1,600 km, starting from the mouth of the river Tapti near the border of Gujarat and Maharashtra to Kanyakumari, the southernmost tip of India in Tamil Nadu.
- It stretches over the six states of Tamil Nadu, Karnataka, Kerala, Goa, Maharashtra and Gujarat.
- It is recognised as one of the world's biodiversity hotspots and some sites of the Western Ghats were inscribed into UNESCO's World Heritage Site list in 2012 by the United Nations Education, Scientific and Cultural Organisation (UNESCO).



### Significance of Western Ghats:

#### **Biological diversity:**

- The Western Ghats is home to a vast biological diversity of flora, fauna, bird, amphibian, reptile and fish species including hundreds of globally threatened species. Many of these species are also endemic to the region.
  - \* Though covering an area of 180,000 sq.km, or just under 6 per cent of the land area of India, the Western Ghats contain more than 30 per cent of all the plant, fish, herpeto-fauna, bird, and mammal species found in India.
  - \* The Western Ghats include a diversity of medicinal plants and important genetic resources such as the wild relatives of grains, fruit and spices.
- The Western Ghats is also recognised as containing the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

#### **Economical:**

- The Western Ghats are rich in mineral resources like iron, manganese and bauxite ores in parts of their ranges.
- The Western Ghats host important plantation crops like pepper and cardamom, which are native to the evergreen forests of the Western Ghats. It also hosts large scale plantations of tea, coffee, oil palm and rubber.
- The forests of Western Ghats are an important source of timber and support a large number of forest-based industries such as paper, plywood, poly-fibres and matchwood.
- The forest-based communities of the Western Ghats have been deriving sustenance from the forest by collecting non-timber forest produce (NTFP).
- The Western Ghats host a number of tourist destinations drawing tourists not only from India but also from foreign nations and thus they contribute to the economy of the host states.

#### **Hydrological significance:**

- The Western Ghats perform important hydrological and watershed functions. Approximately 245 million people live in the peninsular Indian states that receive most of their water supply from rivers originating in the Western Ghats. Thus, the soil and water of this region sustain the livelihoods of millions of people.

- \* It feeds a large number of perennial rivers of peninsular India including the three major eastward-flowing rivers Godavari, Krishna, and Kaveri.

#### **Influence on the climatic condition:**

- The mountains act as a barrier to the rain-laden southwest monsoon winds in late summer in India and thus have a significant impact on the monsoonal rainfall distribution and intensity in India.

#### **Importance in climate action:**

- The forests of Western Ghats play a significant and important ecological function in the sequestration of atmospheric CO<sub>2</sub> and hence have an important role in climate change.
- They account for a substantial proportion of carbon sequestration from the Indian forests.

#### **Threats to Western Ghats ecology:**

- Developmental activities: Large dam projects in the Western Ghats have resulted in significant environmental damage. This has led to large scale deforestation and submergence of pristine forests. Also, the conversion of forest land into agricultural land or for commercial purposes like tourism has resulted in shrinkage of the habitat for the endemic species of the region. This has had significant negative effects on biodiversity.
- Resource extraction: Illegal logging for timber and livestock grazing within and bordering protected areas by high densities of livestock is leading to habitat degradation across the Western Ghats.
- Mining activity: Environmentally unsustainable mining activities have increased the vulnerability of the fragile ecosystem to landslides and environmental pollution. Sand mining is of particular concern.
- Climate change: Global warming and climate change have led to big variations in the duration and intensity of rainfalls in the region. This is giving rise to increased instances and intensity of extreme weather events in the region.

#### **Important committees:**

##### **Madhav Gadgil committee:**

- The Ministry of Environment & Forests had constituted the Western Ghats Ecology Expert Panel (WGEEP) under the Chairmanship of Madhav Gadgil in 2010 to recommend measures for the management of the ecologically sensitive Western Ghats region.
- The panel took a strong stance in favour of ecological conservation efforts of the Western Ghats region.
- It designated the entire Western Ghats as an Ecologically Sensitive Area (ESA).

- It recommended the establishment of a Western Ghats Ecology Authority, as a statutory authority under the Ministry of Environment and Forests, with the powers under Section 3 of the Environment (Protection) Act, 1986.
- It sought to have strict regulation of developmental activities like dam construction, mining.
- It specified a bottom-up approach for governance of the environment with the establishment of fully empowered Biodiversity Management Committees in all local bodies.

#### **Kasturirangan Committee:**

- The Gadgil committee report was criticised for being too environment friendly and impractical to implement. The states opposed the report based on the stand that it would hamper the development process of the states. In this context, the Kasturirangan committee was constituted to examine the WGEEP report.
- Its mandate was to give special attention to “the preservation of the precious biodiversity” and “the rights, needs and development aspirations of the local and indigenous people”.
- The Kasturirangan committee took a more moderate stance on the conservation issue. Unlike Gadgil Committee, it designated only 37% of the Western Ghats as ESA. It sought to regulate developmental activities mainly in the ESA only.

#### **Details:**

- Kerala has witnessed back to back natural calamities like flooding, landslides over the past few years.
- The increasing extreme climate events have resulted in large-scale disasters and destabilised the already vulnerable districts along the Western Ghats. About 40% of Western Ghat ranges lie in Kerala, which makes the State particularly vulnerable to the ecological changes in the mountain chain.
- Flash floods and landslides in the Western Ghats region of Kerala has brought into focus the fragile ecosystem of the Western Ghats mountain chain and raised serious questions on the conservation of the region. The environmentalists argue that this calls for urgent conservation action.
- As the Gadgil Committee reiterated, human interference and unscientific land use had worsened the already damaged ecosystem of the Western Ghats.

#### **Conclusion:**

- A balance between conservation efforts and development should be sought. The focus should be on sustainable economic growth.
- There is the need for exempting areas of very high susceptibility in the Western Ghats from

any types of constructions while urging the government and the local communities to increase the vegetative cover as a first defence against the landslide vulnerability with a high emphasis on nature-based solutions.

### **Environmental pollution and degradation**

#### **22. E-waste disposal, a mounting headache**

- » Prelims: E-waste- major pollutants
- » Mains: Concerns associated with e-waste recycling in India; Recommendations and governmental measures being taken

#### **Context:**

- The article expresses concerns over the e-waste recycling system in New Delhi in particular and India in general.

#### **Background:**

#### **E-waste:**

- The International Telecommunication Union defines e-waste as all items of electrical and electronic equipment (EEE) and its parts that have been discarded by its owner as waste without the intent of re-use.
- This waste is classified into six categories: Cooling and freezing equipment like refrigerators, freezers; other equipment such as televisions, monitors, laptops, notebooks and tablets.
- It also comprises fluorescent lamps and other large and small equipment like washing machines, clothes dryers, dish-washing machines, vacuum cleaners and microwaves. Ventilation equipment, small IT and telecommunication equipment like positioning systems (GPS), pocket calculators, routers, personal computers, printers and telephones are also included in the broad definition of e-waste.

#### **E-waste concerns:**

- E-waste contains hazardous substances such as lead, polychlorinated biphenyls (PCBs), polybrominated biphenyls (PBBs), mercury, polybrominated biphenyl ethers (PBDEs), brominated flame retardants (BFRs), and also valuable substances such as iron, steel, copper, aluminium and plastics.
- E-waste releases harmful chemicals, such as lead, on burning, which adversely impacts human blood, kidney and the peripheral nervous system. When it is thrown in landfills, the chemicals seep in the ground water affecting both land and sea animals.
- Electronic waste is emerging as a serious public health and environmental issue.

## **E-waste generation in India:**

- India is the third-largest producer of e-waste after China and the United States.
  - \* A study by KPMG and ASSOCHAM says computer equipment account for almost 70 per cent of e-waste in India, followed by telecom/phones (12 per cent), electrical equipment (8 per cent) and medical equipment (7 per cent).
- According to a 2018 report by the Associated Chambers of Commerce and Industry of India (ASSOCHAM), India had generated close to two million metric tonnes of e-waste. The e-waste generation in India is projected to rise to three million metric tonnes owing to increasing digitization.
  - \* The country's e-waste generation increased 43 per cent between FY18 and FY20. The pandemic-induced consumption of electronic devices is set to add to the problem in future.
- Delhi was among the top e-waste contributors in the country with 9.5% in the overall e-waste generation.

## **Concerns:**

- The unprecedented generation of e-waste is a cause of concern.
- The high cost of handling and procurement, low margins and under utilisation of capacities pose basic problems to most formal sector or pollution control board-recognised e-waste handlers.
- A major concern for Delhi and also India in general with respect to the e-recycling system is that despite measures in place for collection and recycling, the industry has been dependent on informal players like ragpickers and aggregators without appropriate licences for e-waste disposal.
  - \* A significant portion of the e-waste generated in India goes to the informal sector. As per available estimates, more than 95% of this waste is handled by the informal sector.
  - \* The informal sector is not capable of undertaking special treatment for e-waste processing and disposal.
- The private firm roped in by the East Delhi Municipal Corporation (EDMC) for e-waste collection has received very few pickup requests for e-waste collection which could be indicative of the low awareness of the general citizenry over e-waste handling rules and its significance.
- A substantial proportion of the pickup requests were cancelled as it involved calls for picking up material in working condition and the users' price expectation was higher than the company's offer.

## **Governmental efforts:**

- India is also the only country in South Asia to have a specific legal framework for handling e-waste since 2011.
- The E-waste (Management and Handling) Rules address not just the need to handle e-waste in an environmentally friendly way, but also its transportation, storage and recycling.
- India has also introduced the concept of extended producer responsibility (EPR). In 2016, the rules were tweaked to introduce Producer Responsibility Organization (PRO) while bringing buy-back, deposit refund and exchange schemes under EPR.

## **Recommendations:**

- India needs a multipronged approach to streamline e-waste management.

## **Creating awareness:**

- Given the low level of awareness among the people, there is the need to create awareness of e-waste through various mediums.
  - \* Making contact through resident welfare associations could allow the administration to reach out to a larger number of people in a shorter timeframe.
  - \* Use of social media platforms also offers an easy and affordable way to create awareness among the people.
- People should be encouraged to efficiently use their electronic devices by regularly maintaining them which would help extend the average life of the electronic devices. People should be encouraged to break consumerist patterns. This would invariably help reduce e-waste generation.

## **Formalizing the informal sector:**

- Given the fact that a significant portion of the e-waste goes to the informal sector and the concerns associated with it, there is a need to take appropriate policy measures to formalize the informal sector.
- This could involve measures such as easy licensing of existing informal workers, offering incentives for those with licenses in the form of state support, easy credit facilities, etc.
- The role of informal players cannot be denied and they should be included as part of the solution.

## **Increasing private sector participation:**

- More private players should be involved in e-waste collection and processing. They can bring in the much-needed efficiency and technological solutions for the mounting e-waste problem in India.

- The revenue from valuable metal extraction from e-waste along with state support through tax benefits can incentivize the private sector participation in the sector.
- \* E-waste processing can yield precious metals such as copper, iron, tin, nickel, lead, zinc, silver, gold and palladium. Printed circuit boards contain rare and precious metals such as ruthenium, rhodium, palladium, osmium, iridium and platinum – together referred to as the Platinum Group Metals.

#### Digital solutions:

- Using online portals which people can make use of to raise pickup requests would lead to better efficiency in the e-waste recycling system.

### *Species in News*

## 23. A movement to root out invasive alien species

- » Prelims: Invasive alien species- examples in India
- » Mains: Threat posed by Invasive alien species

#### Context:

- The Pune-based forum called Movement Against Biological Invasions (MABI) is working to combat the menace of invasive alien species.

#### Invasive alien species:

- Alien species are species that occur outside their natural range and dispersal potential. Such species generally have few or no natural predators to keep their population in check.
- The Convention on Biological Diversity (CBD) defines invasive alien species as “an alien species whose introduction and spread threaten ecosystems, habitats, or species with socio-cultural, economic and environmental harm and harm to human health”.
- Invasive alien species occur in all groups of plants and animals as competitors, predators, pathogens and parasites and have invaded almost every type of native ecosystem. Environmentalists have noted that the spread of invasive alien species has become alarming.

## Examples of invasive alien species in India:

Flora	Fauna
<ul style="list-style-type: none"> <li>• Goat weed</li> <li>• Prickly poppy</li> <li>• Palmyra</li> <li>• Datura</li> <li>• Water hyacinth</li> <li>• Lantana camara</li> <li>• Prosopis juliflora</li> <li>• Parthenium</li> <li>• Cosmos sulphureus</li> </ul>	<ul style="list-style-type: none"> <li>• Giant African Snail</li> <li>• Myna</li> <li>• Gold fish</li> <li>• Pigeon</li> <li>• Crazy ant</li> <li>• Tilapia</li> </ul>

#### Factors responsible:

- Alien species are spread by human activity, intended or unintended, to new areas.
- Globalisation is leading to the increased movement of people. Also trade and deforestation have led to the introduction of IAS in the indigenous environment in massive quantities.

#### Threat posed by alien species:

##### *Risk to biodiversity:*

- Invasive species compete for space and light with native flora and are capable of supplanting native plant species like grasses and other herbaceous species. As a result, the local food chain is afflicted with the Invasive alien species. This leads to the elimination of food and cover for native wildlife and thus invasive alien species threaten both endemic plant and animal species and can contribute to loss of biodiversity.

##### *Ecosystem imbalance:*

- The invasive alien species can change the functions of ecosystems and increase losses in forestry and natural resource management costs. This can take the form of degradation of marine and freshwater ecosystems and habitat loss.

##### *Impact on humans:*

- Invasive alien species pose a danger to human health give that some of the species can induce allergies or diseases.
- Invasive alien species hamper the growth of native grasses which are fodder species for herbivores and livestock. Some invasive alien species are even poisonous which may cause allergies and skin diseases among the animals. Given that it is virtually impossible to segregate pure fodder from invasive alien species, the



chances that livestock will be consuming adulterated fodder is high which can also have a bearing on human health as well.

- Another indirect effect of the rise in invasive alien species is a heightening of the man-animal conflict. Example: The widespread prevalence of invasive *Lantana camara* species has reduced the proportion of natural grasses for herbivorous animals forcing their movement to human habitats in search of paddy crops and other edible items. This has resulted in the movement of animals like the Indian gaur and the chinkara (Indian gazelle) from their natural habitats to human settlements.
- Invasive alien plant species also contributes to the issue of weeds in agriculture towards which the farmers are having to spread in terms chemicals and labour. Also the unchecked growth of invasive alien species has an adverse impact on soil health and lead to faster deterioration of soil quality.

#### Details:

- Movement Against Biological Invasions is working towards systematically charting and rooting out Invasive alien species. The measures being taken by it include the following.
  - \* It is undertaking 'obnoxious weed eradication' drives in different parts of India. They are rooting out IAS and holding weed bonfires as part of these efforts.
  - \* Given the poor appreciation and awareness of the challenge posed by Invasive alien species, MABI are working towards increasing awareness on the issue through seminars, workshops, slideshows, video teasers, documentary, information brochures etc.

#### Additional information:

- In another illustration of the threat posed by alien species, the large sized spider, Joro spider (*Trichonephila clavata*) native to East Asia has proliferated in Georgia state of the U.S.
  - \* Joro spider is common in Japan, China, Korea and Taiwan.

#### GM crops

### **24. EU food recall linked to GM rice from India**

- » Prelims: Genetically modified crops; Environment Protection Act, 1986 and status of GM crops in India
- » Mains: Arguments in favour of and against GM crop cultivation in India

#### Context:

- Mars Wrigley (the world's leading manufacturer of chocolate, mints and fruity confections) has alleged that one of its ingredients – rice flour was contaminated with Genetically Modified (GM) rice that originated in India.

- France issued a notification for unauthorised genetically modified rice flour, identifying India as the point of origin.

#### GM crops:

- GM foods are derived from plants whose genes are artificially modified, usually by inserting genetic material from another organism, in order to give it a new property, such as increased yield, tolerance to a herbicide, resistance to disease or drought, or to improve its nutritional value.
  - \* Example- Golden rice involves the insertion of genes from daffodils and maize plants as well from a soil bacterium to create a grain that is enriched with Vitamin A.

#### GM crop cultivation in India:

- India has approved commercial cultivation of only one GM crop, Bt cotton.
- No GM food crop has ever been approved for commercial cultivation in India. Only confined field trials have been allowed for some 20 GM crops in India.

#### India's Stance:

- Commerce Ministry has pointed out that GM rice is not grown commercially in India, let alone exported.
- It has promised a thorough enquiry by its agricultural exports authority.
- It has said that Agricultural and Processed Food Products Export Development Authority (APEDA) is collecting all the details and will enquire every aspect of it thoroughly with the technical and scientific institutions like Genetic Engineering Appraisal Committee (GEAC) and the strictest form of action will be taken accordingly.
- In 2007, when there was widespread concern about GM rice trials and the possibility of cross-contamination, the All India Rice Exporters Association took up the issue with the Department of Biotechnology and the Genetic Engineering Appraisal Committee.
  - \* A policy decision was taken that field trials would not be allowed in the basmati belt, because of worries that the export crop could be affected.
  - \* India's Basmati belt includes Jammu and Kashmir, Punjab, Haryana, Chandigarh, Delhi, Himachal Pradesh, Uttarakhand and (western) Uttar Pradesh.

#### Concerns:

- Worried farmers' groups and environmental activists have noted that multiple GM rice varieties had been approved for confined field trials, and warned that any cross-contamination could dampen the country's agricultural export ambitions.

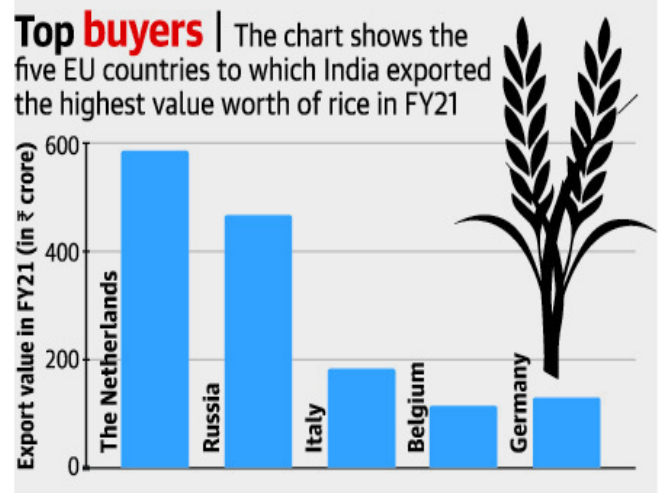
- The issue with GM field trials is that once they take place, they can contaminate crops long after the actual trials either directly or through seed leakages.

#### **Economic Impact**

- The recent development could impact the lucrative export of rice from India.
  - \* India is the world's top rice exporter, earning Rs. 65,000 crore through export of rice.
- A similar situation had played out in 2006 in the U.S. when trace amounts of a GM rice variety were found in shipments ready for exports from the U.S. Trading partners such as Japan, Russia and the EU had suspended rice imports from the U.S., impacting the farmers involved in the cultivation of rice.

#### **India's Rice Exports:**

- India's annual rice exports amount to 18 million tonnes worth ₹65,000 crore.
- It is exported to more than 75 countries.



#### **Note:**

- In India, the Genetic Engineering Appraisal Committee (GEAC) is the apex body that allows for the commercial release of GM crops.
- Use of the unapproved GM variant can attract a jail term of 5 years and a fine of Rs. 1 lakh under the Environment Protection Act, 1986.
- Food Safety and Standards Authority of India (FSSAI) is the authorised body to regulate the imported crops in India

# HEALTH ISSUES

## Government Initiatives/Programmes/schemes

### **1. Pradhan Mantri Ayushman Bharat Health Infrastructure Mission**

- » Prelims: PM-ABHIM- provisions
- » Mains: Significance of the new initiative

#### Context:

- Prime Minister recently launched the Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (ABHIM).

#### Background:

- India's healthcare sector is plagued by many issues. It remains grossly underfunded and faces shortages of staff, equipment, drugs and infrastructure in many parts of the country.
  - \* In India, the ratio of doctor to patient remains abysmally low when compared to the guidelines set by the World Health Organisation (WHO), which sets the average doctor to people ratio at 2.5 doctors per 1000 people. In India this ratio is a mere 0.7 doctors per 1,000 people.
- India lacks an extensive healthcare system. The accessibility and affordability of healthcare has been distributed in a skewed manner and very much to the detriment of the marginalized sections of society.
  - \* Out of the 1.14 million registered modern medicine (allopathic) doctors in India, over 80 per cent operate in cities, which account for only 31 per cent of the country's population. Similarly, when it comes to physical infrastructure, such as Community Health Centres (CHCs), Primary Health Centres (PHCs), District Health Centres and hospitals there is a skewed geographical placement of resources in favour of the urban population. Accessing quality health care hence becomes difficult for the rural populace not only due to lack of requisite medical infrastructure, but also on account of high consultation fees and long travel distances which in most cases has to be undertaken on foot owing to lack of proper transportation facilities.
  - \* There seems to be a growing importance of the private sector in India's healthcare system which is not capable of catering to the health needs of the poor and marginalized communities.

- The COVID-19 pandemic only exposed these weaknesses in India's health system.

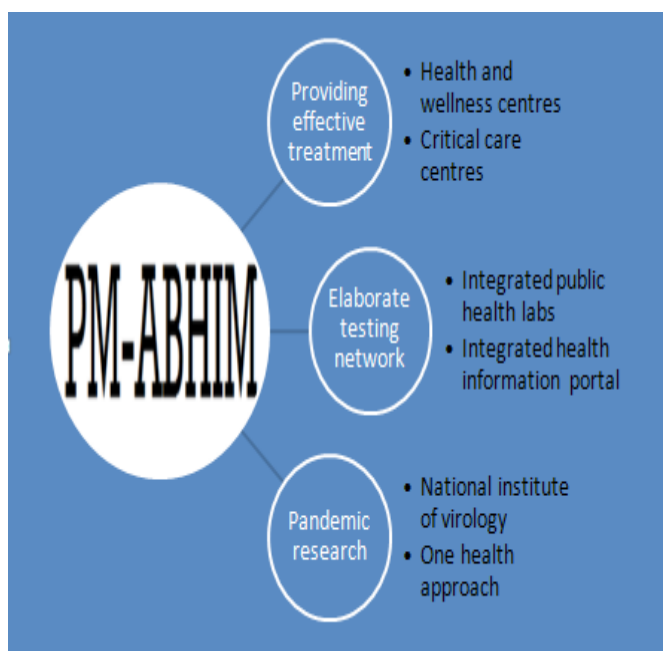
#### Details:

- Following the budget proposal for enhanced investment in the health system and the Fifteenth Finance Commission recommendations for the strengthening of urban and rural primary care, stronger surveillance systems and laboratory capacity, the government has launched the Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (ABHIM).
- The scheme has been launched with an outlay of Rs. 64,180 crore over a period of five years (2021-22 to 2025-26).
- The Ayushman Bharat Health Infrastructure Mission is an addition to the National Health Mission, as a part of the Ayushman Bharat initiative, which aims to provide universal access to equitable, accessible, and high-quality health care that is accountable and responsive to people's needs.
- Some of the key features of the PM Ayushman Bharat Health Infrastructure Mission are as follows.
  - \* 1,50,000 Ayushman Bharat Health and Wellness Centres are to be set up at primary healthcare facilities. The scheme will provide support for both rural and urban health and wellness centres. It will support 17,788 rural Health and Wellness Centres in 10 high focus states and establish 11,024 urban Health and Wellness Centres across the country.
  - \* The development of critical care hospital blocks has been proposed in 602 districts to augment the critical care capacities in public health facilities. These would be established in 12 central institutions such as the All India Institute of Medical Sciences, and in government medical colleges and district hospitals. Critical care services will be available in all the districts of the country with more than five lakh populations through exclusive critical care hospital blocks, while the remaining districts will be covered through referral services.
  - \* Two container-based hospitals, equipped with comprehensive medical facilities, will be stationed in Chennai and Delhi and kept at the ready to be swiftly mobilised by rail or air to respond to any calamity or disaster in the country. This would be the first such facility in Asia.

- \* Every district would have at least one medical college. Under the scheme, 157 new medical colleges have been approved across the nation. Also, support is expected for the up-gradation of existing colleges.
- \* The government will be establishing integrated district public health labs in 730 districts to provide comprehensive laboratory services. Laboratories and diagnostic facilities would be set up at all levels of healthcare at block, district, regional and national levels. Around 134 different types of tests would be done for free at the district level. All the public health labs will be connected through the integrated Health information portal. This will enable an IT-enabled disease surveillance system in India.
- \* There are also proposals for the setting up of the National Platform for One Health, Regional National Institutes of Virology, strengthening of the National Centre for Disease Control (NCDC), upgrade of labs and creation of additional BSL-3 facilities. The 'one health' approach will help prevent, detect, and respond to infectious disease outbreaks in humans and animals.
- Under the PMASBY scheme, preference is given to underserved, backward, and aspirational districts.

### Significance:

- ABHIM can fix the weaknesses in India's health system by addressing critical gaps in the health infrastructure with a focus on most backward regions. The various measures of this scheme will extend primary healthcare services across India thus addressing the most basic aspect of the healthcare system in India. The inclusion of areas like hypertension, diabetes and mental health brings much-needed relief given the increasing prevalence of these diseases.
- The measures will also help build a trained public health workforce that can perform routine public health functions while responding to a public health emergency. The scheme aims to increase the availability of health professionals, correct the existing geographical imbalance in the distribution of medical colleges and effectively utilize the existing infrastructure of district hospitals.
- The Mission would prepare the Indian healthcare sector to deal with any future outbreaks and make it resilient.
  - \* The proposals for the creation of Regional National Institutes of Virology and up-gradation of labs and creation of additional BSL-3 facilities will help strengthen the country's capacity to detect and diagnose new infections.
  - \* The measures like National Platform for One Health will help enhance the capabilities for microbial surveillance.
  - \* The development of an IT-enabled network of surveillance labs will be developed at the block, district, regional and national levels for detecting, investigating, preventing, and combating health emergencies and outbreaks. The hub-and-spoke model of the block, district, regional and national public health laboratories will enable effective microbial surveillance.
  - \* The development of critical care blocks will make the districts self-sufficient in providing comprehensive treatment for infectious diseases.
- The establishment of critical care hospital blocks planned to be established in 602 districts will enable care for those with serious infectious diseases without disrupting other services. In non-pandemic situations, this capacity could be utilised for providing critical care for other disease conditions. The 15 health emergency operation centres and two container-based mobile hospitals will enhance the level of disaster response readiness. It could also supplement the public health facilities in rural areas if required.





- The availability of free diagnostic facilities will not only do away with out of pocket expenses but also help reduce unnecessary travel for the poor by making such services available closer to home.
- ABHIM, if financed and implemented efficiently, can strengthen India's health system by augmenting capacity and creating a framework for coordinated functioning at district, state and national levels. It can help deliver universal healthcare. The Mission would also help produce robust outcomes in public health.

#### Additional information:

- National Health Policy (NHP), 2017 envisages raising public health expenditure from the existing 1.15% to 2.5% of GDP by 2025 in a time-bound manner.

### Diseases in News

## **2. Anti-malarial vaccine**

- » Mains: Malaria disease; RTS,S/AS01 (RTS,S) malaria vaccine; E-2025 initiative

#### Context:

- The World Health Organization (WHO) has endorsed the first anti-malarial vaccine.

#### Issue:

- WHO and its partners have reported stagnation in the progress against the disease that kills more than 2,60,000 African children under the age of five annually.
- According to WHO, Malaria remains a primary cause of childhood illness and death in sub-Saharan Africa.

#### Details:

- RTS,S/AS01 (RTS,S) malaria vaccine is the first-ever anti-malarial vaccine recommended by the WHO.
- The vaccine has been developed by GlaxoSmithKline (GSK).
- It forms an essential part of WHO's E-2025 initiative.
- Using this vaccine on top of existing tools to prevent malaria could save tens of thousands of young lives each year.
- The WHO's recommendation was based on the results from an ongoing pilot programme in Ghana, Kenya and Malawi.

#### Malaria:

- Malaria is a mosquito-borne disease caused by a parasite.
- It is typically transmitted through the bite of an infected Anopheles mosquito. Infected mosquitoes carry the Plasmodium parasite

(Plasmodium vivax) When this mosquito bites a human, the parasite is released into the bloodstream.

- Malaria is typically found in tropical and subtropical climates where the parasites can live. It is most prevalent in Africa, followed by Asia and Latin America. It also affects people in the Middle East and Europe albeit to a much smaller degree.
- The number of malaria cases worldwide in 2019 was around 229 million, according to the World Malaria Report in 2020, with 409,000 lives lost to the mosquito-borne disease.
- The 2020 report said the majority of cases were reported in Africa, while India and Southeast Asia recorded a significant drop. Cases in India fell from approximately 20 million to 6 million, according to the report.

#### Conclusion:

- While further steps are taken to manufacture, fund and roll out the vaccine to nations affected by malaria, maintaining equity of access is key.
- As the work towards providing vaccination continues, nations must not stop the routine malaria prevention activities, including providing insecticide-treated bed nets.
- The immediate step should be speedily and meticulously making the vaccine available from the lab to the field.

### Miscellaneous

## **3. Guduchi (Tinosporacordifolia)**

- » Prelims: Guduchi

#### Context:

- Ministry of Ayush's advisory on the use of Guduchi, also known as, Giloy.

#### Details:

- The advisory confirms that Guduchi (Tinosporacordifolia) is safe to use but some similar looking plants like Tinosporacrispa may be harmful.
- Guduchi is a popularly known herb, familiar as Giloy and is being used in therapeutics since long in AYUSH systems.
- Guduchi's hepato-protective properties are also well established.

#### About Guduchi:

- cordifolia (Guduchi) is a large, glabrous, perennial, deciduous, climbing shrub of weak and fleshy stem found throughout India.
- It is a widely used plant in folk and Ayurvedic systems of medicine.

- The chemical constituents reported from this shrub belong to different classes, such as alkaloids, diterpenoid lactones, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds and polysaccharides.
- Potential medicinal properties reported by scientific research include anti-diabetic, antipyretic, antispasmodic, anti-inflammatory, anti-arthritis, antioxidant, anti-allergic, anti-stress, anti-leprotic, antimalarial, hepato-protective, immuno-modulatory and anti-neoplastic activities.

### Diseases in News

#### **4. Molnupiravir**

- » Prelims: Molnupiravir drug
- Molnupiravir is an investigational anti-viral drug for COVID-19 being developed by pharmaceutical major Merck and Ridgeback Biotherapeutics.
- The drug works by inhibiting the process by which the virus replicates. It alters critical enzymes that are necessary for the virus to begin replicating in the body's host cells.
- Phase 3 trials of the drug have shown promising results.

#### Significance:

- Molnupiravir is a pill and hence will not be required to be administered
- It would also be cheaper than the monoclonal antibody therapy.
- The drug has shown 'consistent efficacy' across viral variants Gamma, Delta and Mu in those with mild or moderate disease

### Miscellaneous

#### **5. National Formulary of India (NFI)**

- » Mains: Rational use of medicines

#### Context:

- Union Minister launched the sixth edition of the National Formulary of India (NFI).

#### What is the National Formulary of India?

- NFI has been published by Indian Pharmacopoeia Commission (IPC) to promote rational use of medicines in the country.
  - \* The Indian Pharmacopoeia Commission (IPC) is an autonomous institution under the Ministry of Health and Family Welfare which is responsible to set standards of drugs in the country
- A formulary is a manual containing clinically oriented summaries of pharmacological information about selected drugs.

- \* The manual may also include administrative and regulatory information pertaining to the prescribing and dispensing of drugs.
- \* A national formulary generally concentrates on available and affordable medicines that are relevant to the treatment of diseases in a particular country.
- \* It would act as a guidance document for all the healthcare professionals such as clinicians, pharmacists, nurses, dentists etc. It will play a crucial role in daily clinical practices.

- Formularies are also frequently created for different levels of health care, different sectors and for individual hospitals.

- The NFI 2021 is aligned with the National Health Programmes and the National List of Essential Medicines (NLEM).

### Diseases in News

#### **6. Rabies deaths despite vaccination**

- » Prelims: Rabies disease

#### Context:

- A proper study has been sought into recent deaths due to rabies among people who are vaccinated against the infection.

#### Details

- Rabies is a fatal infection in which the chances of death are 100%.
- Patients are given four to five doses of the anti-rabies vaccine in intervals from the day of the bite, along with the anti-rabies serum.
- The vaccine gives full protection only 14 days after it is administered. The serum, in the meanwhile, ensures temporary protection

#### Concerns

- Deaths are occurring in spite of patients being administered with the vaccine and the serum on time
- It may be due to the bad quality of the serum, or the manner in which it is transported to the hospital and stored.
- People who are administering the serum may not be doing it in the right way as well

#### Way forward

- There is a need to verify the quality of the serum. The healthcare workers need better training too

#### Rabies:

- Rabies is an acute viral disease that causes fatal encephalomyelitis i.e. the inflammation of the brain as well as the spinal cord.

\* It affects the CNS or Central nervous system. This virus belongs to a family called Rhabdoviridae.

- The virus is found in wild and some domestic animals and is transmitted to other animals and to humans through their saliva (following bites, scratches, licks on broken skin and mucous membrane).
- In India, dogs are responsible for about 97% of human rabies, followed by cats (2%), jackals, mongoose and others (1%).
- The disease is mainly transmitted by the bite of a rabid dog.
- Rabies is one of the Neglected Tropical Diseases (NTD) that predominantly affects poor and vulnerable populations who live in remote rural locations.
- Approximately 80% of human cases occur in rural areas.

#### Issue Area

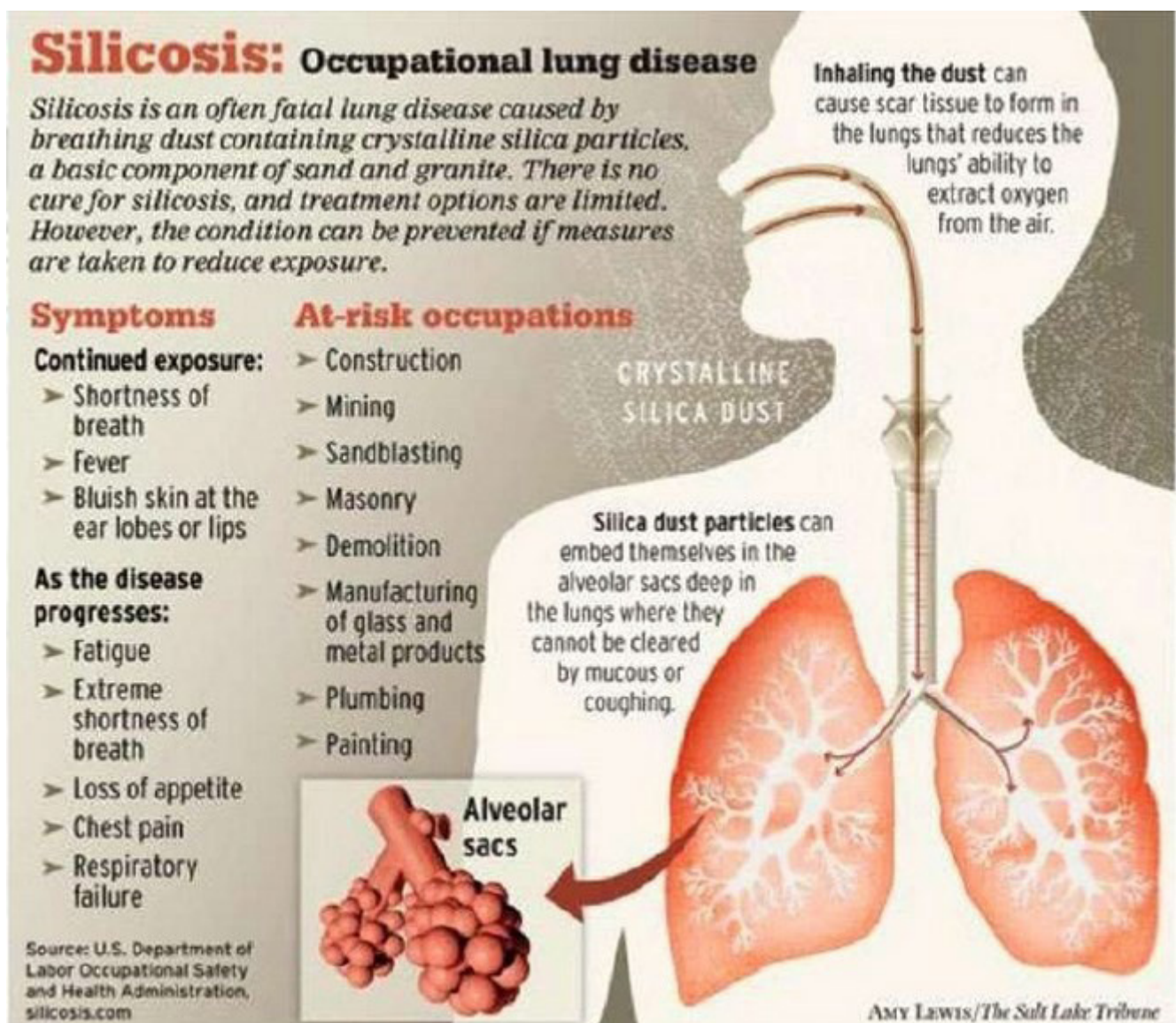
- Although effective human vaccines and immunoglobulins exist for rabies, they are not readily available or accessible to those in need.

### Diseases in News

#### 7. Silicosis

» Prelims: Silicosis disease

- Silicosis is a long-term lung disease caused by inhaling large amounts of crystalline silica dust, usually over many years.
- Silica is a substance naturally found in certain types of stone, rock, sand and clay. Working with these materials can create a very fine dust that can be easily inhaled. Once inside the lungs, it causes swelling (inflammation) and gradually leads to areas of hardened and scarred lung tissue (fibrosis).
- Silicosis is an occupational disease due to dust exposure. It is incurable and can cause permanent disability.





### Rajasthan state government's policy on silicosis:

- Rajasthan contributes over 17% of the value of mineral production in India. This accounts for the largest contribution from states.
- Rajasthan was the first state to notify silicosis as an 'epidemic' in 2015, under the Rajasthan Epidemic Diseases Act, 1957. In 2019, it also announced a formal Pneumoconiosis Policy.

### Miscellaneous

#### **8. World Mental Health Day**

- » Mains: Mental health- concerns in India
- World Mental Health Day is observed on 10 October every year. This day tries to create awareness about mental health issues.
- Theme: 'Mental Health in An Unequal World'
- As per recent surveys around 14% of the population or 1 out of 7 individuals suffer from a psychological disorder.
- The most common mental health disorders are depressive disorders, anxiety disorders, and substance abuse.

### Diseases in news

#### **9. BP, cholesterol control key for Type 1 diabetics**

- » Prelims: Diabetes- types

##### Context:

- According to a pan-India study of long-term survivors with Type-1 diabetes (T1D), good control of not only blood sugar but also blood pressure and cholesterol is essential for survival and a good quality of life among people with the condition.

##### Diabetes:

- Diabetes is a disease that affects how the body uses glucose. Glucose is a sugar which is the body's main source of fuel.
- The body needs glucose to keep running. If someone has diabetes, he or she has trouble with a hormone which is called insulin.
- Insulin is made in the pancreas, and it lowers the level of glucose in the blood.
- Diabetes is a kind of metabolic ailment in which the body is incapable of producing insulin, leading to high blood glucose in the body leading to cardiovascular diseases, kidney ailments, eye problems, etc.

There are three main types of diabetes:

##### Type 1 diabetes:

- Type 1 diabetes used to be called juvenile-onset diabetes. It is usually caused by an auto-immune reaction where the body's defence system attacks the cells that produce insulin.
- People with type 1 diabetes produce very little or no insulin.
- The disease may affect people of any age but usually develops in children or young adults.
- People with this form of diabetes need injections of insulin every day in order to control the levels of glucose in their blood.

##### Type 2 Diabetes:

- Type 2 diabetes used to be called non-insulin dependent diabetes or adult-onset diabetes, and accounts for at least 90% of all cases of diabetes.
- It is characterised by insulin resistance and relative insulin deficiency, either or both of which may be present at the time diabetes is diagnosed.
- The diagnosis of type 2 diabetes can occur at any age.
- Type 2 diabetes may remain undetected for many years and the diagnosis is often made when a complication appears or a routine blood or urine glucose test is done.
- It is often, but not always, associated with overweight or obesity, which itself can cause insulin resistance and lead to high blood glucose levels.

##### Gestational diabetes:

- Gestational Diabetes (GDM) is a form of diabetes consisting of high blood glucose levels during pregnancy.
- It develops in one in 25 pregnancies worldwide and is associated with complications to both mother and baby.
- GDM usually disappears after pregnancy but women with GDM and their children are at an increased risk of developing type 2 diabetes later in life.
- Approximately half of women with a history of GDM go on to develop type 2 diabetes within five to ten years after delivery.

##### Note:

- India is home to more than 95,000 children with T1D, reported to be the highest in the world, according to the 9th International Diabetes Federation Atlas. Given that life expectancy in India is in general lower, the subject definitely needs attention.



## Miscellaneous

### 10. Detail in relief

» Prelims: SDRF

#### Context:

- The Supreme Court has said that the State Governments should not deny the ex gratia of ₹50,000 each to the families of persons who died of COVID-19 merely on the grounds that their death certificates did not show the virus as the cause of death.

#### Details:

- The Supreme Court Bench underscored this point while approving the guidelines proposed by the National Disaster Management Authority (NDMA) under the Disaster Management Act for grant of ex gratia to the kin of people who died of COVID-19.
- The States have been tasked with providing the relief amount from their State Disaster Response Fund (SDRF).
  - \* The District Disaster Management Authorities would make the disbursements.
  - \* District-level committees would deal with grievances regarding certification of death and issue amended documents.
  - \* The committees would have to record the reasons for rejecting claims.
  - \* The payment would continue for future COVID deaths until further notification.
- The guidelines have said families of those who committed suicide within 30 days of a COVID-positive diagnosis would also be eligible for ex gratia.
- The National Disaster Management Authority issued guidelines, specifying that ₹50,000 be paid for each death.
- While the primary requirement to avail of this assistance is that the death should be certified as having been caused by COVID-19, the Court has rightly ruled that the cause mentioned in the death certificate would not be conclusive by itself, and that if other documents are provided, the family shall be entitled to the ex gratia payment.
- It has been made clear that deaths occurring within 30 days from the date of testing or from the date of being clinically determined a COVID-19 case shall be treated as eligible for the aid, even if the death takes place outside the hospital/in-patient facility.
- It has also advised the authorities to avoid technicalities in processing claims.

## Significance of the order:

- Experience has shown that hospitals tend to attribute some deaths to co-morbidities rather than the infection; and many died after testing negative during a spell of hospitalisation or after discharge.
- The most welcome feature of order detailing is the stern caveat that no State shall deny the benefit solely on the ground that a person's death certificate did not specify the cause of death as due to the novel coronavirus disease.
- It is a matter of consolation to those likely to have their claims rejected or disputed that the Court has created an appeal mechanism in the form of Grievance Redressal Committees at the district level.

## Diseases in News

### 11. Expert panel clears Covaxin for emergency use in 2-18 age group

» Prelims: Types of vaccines and their functioning; CDSCO

#### Context:

- Bharat Biotech's COVID-19 vaccine Covaxin (BBV152) has been recommended for emergency use authorisation (EUA) for 2 to 18-year-olds by the Subject Expert Committee (SEC) of the Central Drugs Standards Control Organisation (CDSCO).

The infographic is divided into three main sections. The top left section features a green checkmark and a thumbs-up icon next to a crossed-out virus icon, with the text 'THE TRIALS: Bharat Biotech completed Phase 2 and Phase 3 trials of the vaccine among children'. The top right section shows a person's head and shoulders with a syringe icon, with the text 'AGE GROUPS: The trials were done in the age groups of 2-6, 6-12 and 12-18 in September'. The bottom section shows a vial of the vaccine and a syringe, with the text 'RECOMMENDED DOSES: Two doses could be administered to children within a gap of 28 days'. On the far right, there is a blue vertical banner with the text 'This represents one of the first approvals worldwide for COVID-19 vaccines for the 2-18 age group' and 'BHARAT BIOTECH' at the bottom, accompanied by an image of the vaccine vial and a virus particle.

**THE TRIALS:** Bharat Biotech completed Phase 2 and Phase 3 trials of the vaccine among children

**AGE GROUPS:** The trials were done in the age groups of 2-6, 6-12 and 12-18 in September

**RECOMMENDED DOSES:** Two doses could be administered to children within a gap of 28 days

This represents one of the first approvals worldwide for COVID-19 vaccines for the 2-18 age group  
BHARAT BIOTECH

**Central Drugs Standards Control Organisation (CDSCO):**

- CDSCO is the central drug authority in India.
- It is responsible for approving licenses for certain categories of drugs.

**Functions of the CDSCO**

The CDSCO is responsible for the following:

- Drug approval under the Drugs and Cosmetics Act.
- Conducting clinical trials.
- Setting standards for drugs.
- Quality control over drugs imported into the country.
- Coordinating activities of the state drug control organisations.
- Registration of foreign manufacturers of drugs and medical devices whose products are to be imported into the country.
- Grant of licences to import drugs by Government hospitals or Medical Institutions for the use of their patients.
- Recommend banning of drugs considered harmful or sub-therapeutic under Section 26A of the Drugs and Cosmetics Act.

**Covaxin:**

- Covaxin is India's first indigenous, whole-virion, inactivated vaccine developed by Bharat Biotech in collaboration with the Indian Medical Research Council (ICMR) and the National Institute of Virology (NIV).

# SOCIAL ISSUES

## Government schemes/initiatives and programmes

### 1. Tejaswini initiative

- » Prelims: Tejaswini initiative
- » Mains: Violence against women; governmental initiatives

Tejaswini – a women-centric safety initiative of north-west district – Delhi.

- The initiative aimed to reach out to women belonging to all strata of society and female senior citizens, and also to safeguard the rights and dignity of women and children.
- The tasks and assignments are carried out by women beat staff.
- It resulted in significant growth in terms of its reach and scope of work.
- The presence of women constables and their identifying the needy and distressed people have worked as a catalyst for building confidence and courage among women and making them more aware of their own safety.
- These women beat constables work in tandem with various NGOs, schools, colleges and other agencies to get insights and spread legal and social awareness of various issues concerning women and children.

## Issue of poverty and hunger in India

### 2. The State Nutrition Profiles

- » Prelims: Wasting and stunting
- » Mains: Malnutrition in India

#### Context:

- NITI Aayog, in a joint effort with IFPRI, IIPS, UNICEF and IEG launch “The State Nutrition Profiles” for 19 States and Union Territories.

#### Details:

- NITI Aayog, in a joint effort with International Food Policy Research Institute (IFPRI), Indian Institute of Population Sciences (IIPS), UNICEF and Institute of Economic Growth (IEG) launched ‘The State Nutrition Profiles’ for 19 States and Union Territories.
- The ‘State Nutrition Profiles’ (SNPs) give insights on nutrition outcomes, immediate and underlying determinants and interventions based on NFHS-rounds 3, 4 and 5.

- The SNPs include a comprehensive compilation of crucial data that can positively affect policy decisions and facilitate research in the area.
- The trend analysis of key indicators such as wasting, stunting, anaemia, underweight and overweight and NCDs (Diabetes and High blood pressure) showcase the variability of performance across districts.
- The reports highlight the best and worst performing districts, highest burden districts and top coverage districts of the country.
- The SNPs are based on the headcount-based analyses and use of data from NFHS-5 to provide evidence that helps identify priority districts and number of districts in the state with public health concern as per WHO guidelines.
- Each SNP has incorporated key takeaways for children, women and men and identifies areas where the state has the potential to improve further.

## Social issues-Related to children

### 3. Youth hit by COVID’s mental toll: UNICEF

- » Prelims: UNICEF
- » Mains: Mental health issue in India

#### Context:

- Release of UNICEF’s global flagship publication: “The State of the World’s Children 2021; On My Mind: promoting, protecting and caring for children’s mental health”.

#### Mental health issue in India:

- The report details the significant impact of COVID-19 pandemic on children’s mental health.
- Mental health issues in developing countries such as India have been on the rise. Around 14% of those aged 15 to 24 in India, or 1 in 7 reported often feeling depressed. Many are also at a higher risk of neglect and abuse. This poses severe risks to the healthy development of children.
- As per the report, only 41% of young people in India felt it was good to seek support for mental health problems as compared to an average of 83% across the countries surveyed. This might be indicative of the lack of awareness on the mental health issue and also the stigma associated with mental health issues in India.

## *Social Issues-Related to children*

### **4. Teen pregnancies pose a challenge in Rajasthan**

- » Mains: Teen pregnancies- causative factors, concerns

#### **Context:**

- Amid the high prevalence of child marriages, reducing teenage pregnancies continues to be the biggest challenge in addressing issues related to the reproductive health of adolescents in Rajasthan.

#### **Details:**

- More than one-third of the girls get married before they cross 18 and 6.3% of girls in the age group of 15 to 19 years are already mothers or are pregnant.
- The women in the state face challenges in the field of sexual and reproductive health because of structural poverty, social discrimination, regressive social norms, inadequate education, and early marriage and childbearing.

#### **Way Forward:**

- A study states that for every ₹100 spent on meeting the unmet needs of adolescents, there will be a return of approximately ₹300 in terms of healthcare costs saved.
  - \* This indicates a very high potential for gains in health and economic gains from the interventions.
  - \* The potential health gains from the interventions could avert 1.45 lakh unwanted pregnancies, 1.46 lakh unwanted births, over 14,000 unsafe abortions, and the deaths of more than 7,000 infants and 300 pregnant women between 2021 and 2025.
  - \* The findings also revealed that a per capita investment of ₹1 in weekly iron and folic acid supplement (WIFS) could save almost ₹2 to ₹20 in terms of averted productivity loss in adolescents.
- Adolescents comprise 23% of Rajasthan's population, their demographic dividend could be harnessed through effective strategies.
- Investment in sexual and reproductive health is crucial for the State.
- There is a need to increase the modern contraceptive prevalence rate.

## *Government schemes/initiatives and programmes*

### **5. A State, a 'clean sweep' and the art of sanitation**

- » Prelims: Swachh Bharat Abhiyan

- The article talks about the commendable progress made by Madhya Pradesh in implementing the Swachh Bharat Abhiyan.

#### **Swachh Bharat Abhiyan:**

- This campaign was launched by the Prime Minister on 2nd October 2014 to honour Mahatma Gandhi's vision of a clean country.
- The Swachh Bharat Abhiyan (SBA), or Clean India Mission, aimed to provide every family with sanitation facilities, including toilets, solid and liquid waste disposal systems.
- The call to achieve the goal by October 2, 2019, and make this an appropriate tribute to Mahatma Gandhi, the Father of the Nation, on his 150th birth anniversary was well-received by all Indian citizens and the international community, too.

#### **Details:**

- Madhya Pradesh (MP) Government followed a comprehensive and scientific approach in implementing the Swachh Bharat Abhiyan.
- Urban Madhya Pradesh received its ODF certification on October 2, 2017.
- Rural Madhya Pradesh received its ODF certification the following year on October 2, 2018.
- Madhya Pradesh ranked third in the country in the cleanliness survey, 2020.
- Indore has been ranked the cleanest city in the country in Swachh Survekshan (Cleanliness Survey) since 2017. It has become India's first 'Water Plus' city in Swachh Survekshan 2021.
  - \* It achieved this feat by treating its wastewater to a satisfactory level, before releasing it into rivers.
- The capital city of Bhopal has bagged the title of the cleanest and the greenest capital of the country in the cleanliness survey of 2020.

#### **MP's Course of Action in Implementing SBA:**

- A comprehensive exercise was initiated to identify the sanitation issues people faced through a series of interactions with all identified stakeholders.
- Consequently, insights were gathered to inform the strategy to make Madhya Pradesh 100% Open Defecation Free (ODF) by 2019.
- Swachhta (cleanliness) was made an individual's responsibility, both at a personal and public level.
- People's participation was the driving force behind the success of Swachh Bharat Abhiyan in Madhya Pradesh.
- A multi-pronged strategy was designed involving the construction of toilets, implementing tough regulatory steps such as levying fines for open defecation and encouraging behavioural change through innovation.



\* This approach guaranteed the sustenance of changed behaviours and the longevity of the impact of efforts.

- Good leadership encouraged a sustained change of behaviour. Right from a Collector to a local level leader at the gram panchayat level, they took the message of cleanliness to the people.
- What followed was a remarkable change in the attitudes of the people as they began to own the movement.

### **Conclusion**

- The collective efforts of the citizens of Madhya Pradesh and the State machinery have brought about an irreversible positive transformation in sanitation, right down to the grassroots.

# EDUCATION

## *Issues Relating to Education*

### **1. SC flags consequences of growing digital divide**

- » Mains: Challenges faced by students during the pandemic lockdown- Digital divide

#### **Context:**

- The Supreme Court has warned that the digital divide caused by online classes will defeat the fundamental right of every child to education.

#### **Issue:**

- During the course of the pandemic, as schools increasingly turned to online education to avoid exposing young children to the pandemic, the digital divide produced stark consequences.
- Children belonging to the Economically Weaker Sections [EWS]/Disadvantaged Groups [DG] had to suffer the consequence of not having to fully pursue their education or worse still drop out because of the lack of access to the Internet and computers.

#### **Details:**

- The court regretted the fact that the right to education now hinged on who could afford "gadgets" for online classes and who could not.
- It highlighted that many children dropped out of school during the pandemic and even run the danger of being drawn into child labour or worse, child trafficking.
- It said that even though schools are now reopening gradually, the need to provide adequate computer-based equipment together with access to online facilities for children is of utmost importance.

#### **Note:**

- Earlier, the Delhi High Court had directed both private and government schools in the Capital to provide gadgets and Internet packages free of cost to poor students for attending online classes

# HISTORY

## *Important kingdoms of south India*

### **1. Chola inscriptions on civic officials' eligibility**

» Prelims: Thenneri inscriptions; Kudavolai

#### **Context:**

- Chola inscriptions in Tamil Nadu.

#### **Details:**

*Inscriptions at Thenneri village in Kancheepuram district:*

- Chola-era inscriptions talk about the qualifications required for members of the village administrative council.
- However, very little is known about the Thenneri inscriptions laying down qualifications for candidates to village administrative committees known as 'perumkurisabai'.
- It also sheds light on how farm produce was taxed.
- These inscriptions which dwell upon 'Kudavolai' that is a system to elect members to the annual committee, garden committee, tank committee and other committees for 30 wards — are well-known.
  - \* The annual committee is known as 'variyaṁ'.
- The inscriptions are on the walls of the Kanthaleeswarar temple.

#### **Note:**

- The Kanthaleeswarar temple and the Abathsahaswarar temple are on the banks of Thenneri.
  - \* They were constructed by SembianMahadevi, the grandmother of Chola King Rajaraja, in memory of her son UthamaChola.
- Perumpanatturupadai is a Sangam-era literary work

## Lessons from the Lives and Teachings of Great Leaders, Reformers

### **1. Reading Gandhi as a lesson of political maturity**

- » Mains: Major aspects of Gandhiji's vision and approach to political, social and economical issues; Its relevance in contemporary times

The article talks about Gandhi's appeal to conscientious politics and nobility of spirit that holds relevance in today's world.

#### Mohandas Karamchand Gandhi:

- Mahatma Gandhi remains the most widely known political leader of modern India.
- His successful non-violent movement against British rule in India confirmed his stature as a major historical figure.
- His philosophical significance continues to inspire millions of people around the globe — to fight against inequality, injustice and historical wrongs.
- Gandhi stands relevant and meaningful for the contemporary world due to his political legacy.

#### How is Gandhi different from present-day politicians?

- For Gandhi, politics, like spirituality, was a space to examine and experience Truth, which he considered not as a given process, but as an effort of re-evaluation and reformulation of reality.

#### Ethics in Politics:

- What distinguishes the Mahatma from all politicians in today's world is his simplicity and honesty.
- Gandhi believed in no divorce between politics and ethics. Politics was essentially an ethical mode of conduct for him.
- His belief in the moral growth of humanity is a rarity in present-day politicians.
- In a world such as ours which suffers from an immaturity of politics and politicians, either in tyrannical situations such as Afghanistan, Myanmar, Syria, etc. or in democracies such as the United States, Spain, Poland, India, etc. reading Gandhi as a lesson of political maturity is important.

#### Gandhi's Culture of Patience:

- As a practitioner of empathetic humanism and a pluralist thinker, Gandhi was an exemplar of a lifelong process of listening and learning.

- He played the role of an exemplar in prescribing "patience" as a means to understand and approach the other.
- The dialogical nature of Gandhi's culture of patience finds its roots in the idea of epistemic humility as a necessary methodology in approaching and understanding other cultures and religions.
  - \* Epistemic humility is an intellectual virtue.
  - \* It is grounded in the realization that our knowledge is always provisional and incomplete and that it might require revision in light of new evidence.
- The entire Gandhian thought in the realm of religion and politics revolves around this concept of epistemic humility.
- That is why Gandhi had a profoundly ethical view of religions.
- There has never been a better time to practise the virtue of epistemic humility.

#### Swaraj:

- The capacity to engage constructively with conflicting values was an essential component of Mahatma Gandhi's practical wisdom.
- Gandhi believed that all individuals irrespective of their religion, race and culture had the right to self-governance.
- Swaraj as a space of self-realisation was where the ethical and the political joined in the Gandhian political philosophy.
- On account of his overriding concern for the self-respect of individuals and nations, Gandhi joined the two notions of truth and non-violence to that of the term Swaraj.

#### A self-transcendence:

- Gandhi did not consider freedom as a mere political act, but he defined it primarily as an ethical enterprise.
- He applied the process of individual self-transcendence to the idea of civilisation, since he considered civilisation as an exercise of human maturity.
- He firmly believed that the anthropological and ethical origins of such a state of maturity resided in the spiritual capacity of human beings.
- He also underlined this move towards maturity as a process of learning to be responsible towards oneself and others.



- As a result, everything he did and wrote during his lifetime was an attempt to bring into the open his own journey of intellectual and political maturity.
- According to Gandhi, character-building was an art of developing a sense of autonomy and having authority over one's self.

Gandhi, therefore, approached pragmatic politics as a form of character-building and not necessarily a struggle for getting elected or grasping power.

#### **A continuing relevance:**

- Mahatma Gandhi argued, "Where there is egotism, we shall find incivility and arrogance. Where it is absent, we shall find a sense of self-respect together with civility... He who holds his self-respect dear acts towards everyone in a spirit of friendship, for he values others' self-respect as much as he values his own. He sees himself in all and everyone else in himself, puts himself in line with others. The egotist keeps aloof from others and, believing himself superior to the rest of the world, he takes [it] upon himself to judge everyone and in the result enables the world to have the measure of his smallness."
- Despite all his shortcomings, Gandhi's appeal to mature and conscientious politics and nobility of spirit continues to be a strong ethical response to the political issues and challenges of our time. That is why, Gandhi remains our contemporary, while he belongs to our future.

# GOVERNANCE

## Economic Governance

### 1. Pandora Papers

- » Prelims: Pandora papers; Trust and off the shelf companies
- » Mains: Significance of the expose and recommendations to control the practice of financial irregularities

#### Context:

- An investigation published by the International Consortium of Investigative Journalists (ICIJ) media consortium has uncovered offshore assets of prominent personalities.

#### Details:

- "Pandora Papers" includes over 11.9 million leaked files from 14 global corporate services firms which set up about 29,000 off-the-shelf companies and private trusts in tax-haven jurisdictions.
- The documents are drawn from financial services companies in countries, including the British Virgin Islands, Panama, Belize, Cyprus, the United Arab Emirates, Singapore and Switzerland. More than two-thirds of the companies were set up in the British Virgin Islands.
- These documents relate to the ultimate ownership of assets 'settled' (or placed) in private offshore trusts and the investments including cash, shareholding, and real estate properties, held by the offshore entities.
- Some 35 current and former leaders are featured in the documents analysed by the ICIJ — facing allegations ranging from corruption to money laundering and global tax avoidance.
- There are at least 380 persons of Indian nationality in the Pandora Papers

#### Trust:

- A trust can be described as a fiduciary arrangement where a third party, referred to as the trustee, holds assets on behalf of individuals or organizations that are to benefit from it.
- It is generally used for estate planning purposes and succession planning. It helps large business families to consolidate their assets — financial investments, shareholding, and real estate property.

- The Indian Trusts Act, 1882, gives legal basis to the concept of trusts. India also recognises offshore trusts i.e., trusts set up in other tax jurisdictions.

#### Off-the-Shelf Company

- An 'off-the-shelf' company or ready-made company is a pre-registered limited company, however, it has never been traded. An 'off-the-shelf' company is ready for immediate use and can be purchased after paying a certain cost for it.

#### India's response:

- The Union Government has promised an investigation into the revelations in the Pandora Papers and assured appropriate action in such cases as per law.
- The investigations would be monitored through a multi-agency group. The multi-agency group headed by the Central Board of Direct Taxes Chairman, with representatives from the Enforcement Directorate, the Financial Intelligence Unit and the Reserve Bank of India, would keep a tab of the phased disclosures from the Pandora Papers indicated by the International Consortium of Investigative Journalists (ICIJ) website.
- India is also part of an Inter-Governmental Group that ensured collaboration and experience sharing to effectively address tax risks associated with such leaks.
- Also, following earlier similar such leaks in the form of ICIJ, HSBC, Panama Papers and Paradise Papers, the government has already enacted the Black Money (Undisclosed Foreign Income and Assets) and Imposition of Tax Act, 2015, with an aim to curb black money, or undisclosed foreign assets and income by imposing suitable tax and penalty on such income.

#### Significance of the expose:

- The Pandora papers reveal how the rich, the famous and the notorious set up complex multi-layered trust structures for estate planning. This is particularly in jurisdictions that are loosely regulated for tax purposes, but characterized by air-tight secrecy laws.
- The Pandora Papers reveal how trusts are used as a vehicle in conjunction with offshore companies set up for the sole purpose of holding investments and other assets by business families and ultra-rich individuals.
- The Pandora Papers investigation shows how businesses disguised as Trusts have created a new normal with rising concerns of money

### Conclusion:

- The “Pandora Papers” are the latest in a series of mass ICIJ leaks of financial documents that started with Lux Leaks in 2014 and was followed by the Panama Papers, the Paradise Papers and FinCen.
  - \* The Panama and Paradise Papers dealt largely with offshore entities set up by individuals and corporates respectively.
- The intentions of tax evasion and tax avoidance have adverse impacts on the Indian economy and society at large and thus needs to be addressed.
- The people involving in financial irregularities should be brought to justice and the existing loopholes in terms of the law should be addressed to avoid their misuse.

### Government Initiatives

#### **2. CRISP-M Tool for MGNREGS launched**

- » Mains: Use of technology in improving governance and implementation of government schemes

#### Context:

- Climate Resilience Information System and Planning (CRISP-M) tool for MGNREGS launched.

#### Details:

- Union Minister has launched the CRISP-M tool for the integration of climate information in Geographic Information System (GIS) based watershed planning under Mahatma Gandhi NREGA.
- The CRISP-M tool will help embed climate information in the GIS based planning and implementation of MGNREGA.
- The tool is expected to help communities undertake climate risk management more effectively by combining scientific climate risk information with the traditional knowledge, practices and skills of communities.
- CRISP-M is a web and mobile phone-based geographic information system-aided tool that has been designed to help communities make climate-smart decisions. It helps enable them to absorb the effects of climate risks, adapt to climate impacts and transform their capacities to deal with growing climate impacts.

### Police Reforms

#### **3. CJI for forming special panels to probe ‘atrocities’ by police**

- » Mains: Police reforms in India

### Context

- Chief Justice of India N.V. Ramana has expressed his strong reservations about the conduct of police officers and bureaucracy in the country.

### Details:

- Chief Justice of India has said that he is in favour of forming standing committees headed by the Chief Justices of the High Courts to investigate complaints received from the common man of atrocities committed by the bureaucracy, especially police officers.
- Some police officers are in the spotlight for committing serious crimes.
  - \* Recently, police officers in Gorakhpur, Uttar Pradesh, have been accused of causing the death of a businessman during a raid in a hotel.
  - \* In Tamil Nadu, the CBI chargesheeted nine policemen for the custodial deaths of father-son duo P. Jayaraj and J. Benicks.
  - \* There have been instances of district administration officers caught on video manhandling citizens during the lockdown.
- The Supreme Court had raised the issue of nexus between politicians in power and police officers.
- Also, earlier, the Supreme Court had orally referred to a disturbing trend, where police officials, who had sided with the party in power, are later targeted when another political dispensation comes to power.

### Important Aspects of Governance, Transparency and Accountability

#### **4. SC sets up committee to examine Pegasus allegations**

- » Prelims: Right to privacy
- » Mains: Supreme Court judgment on Pegasus allegations and its significance

#### Context

- The Supreme Court (SC) has appointed a three-member technical committee supervised by former SC judge, Justice R.V. Raveendran to investigate if the Government used spyware Pegasus, to snoop on Indian citizens, including journalists and political leaders.

#### Pegasus

- It is a military-grade spyware made by Israeli cyber-surveillance company NSO Group.
- The NSO Group sells its spyware only to certain undisclosed governments and the end-user of its products are “exclusively government intelligence and law enforcement agencies”.

### Why did the SC create an independent expert committee?

Government's failure to reply on Pegasus

- The government did not answer whether it had bought the spyware to snoop upon Indians or not and stonewalled questions in Parliament about its usage.
- It further refused to respond to the allegations made by the petitioners even when prodded by the Supreme Court.
  - \* In fact, the Court cited the 2011 landmark ruling on black money Ram Jethmalani v. Union of India to say that the Government "should not take an adversarial position when the fundamental rights of citizens are at threat".

Surveillance was not backed by law

- The Constitution mandates that any restriction on the right to privacy must be through a valid law, be necessary to meet a legitimate purpose and be proportionate, i.e., there is a proper balance to be achieved between that purpose and the harm caused by limiting the right.
- It is likely that the snooping, if any, through Pegasus may not be sanctioned by any law.

National security as the ground for not giving relevant information

- The government refused to disclose information on who was spied on claiming it's a national security secret.

SC observation

- The government cannot get a "free pass", citing the "bugbear" of violation of national security, when constitutional rights of the citizens were at stake. The government cannot merely evoke 'national security' to stonewall judicial review. There cannot be an omnibus denial of information.
  - \* A balance has to be struck between cherished liberties and "necessary" surveillance by the State to protect the citizens' liberties.
- The SC feels if the allegation is right, the snooping exercise would widely impact the right to privacy and freedom of speech of ordinary citizens.

### Concerns

- There are allegations that Pegasus was used to implant false documents and evidence on the devices of persons under surveillance.
- The Supreme Court expressed concern about the protection of journalistic freedom.
  - \* It said the State should not create an atmosphere that has a "chilling effect" on the freedom of the press.

### Terms of reference

The court has set seven terms of reference for the committee, which are essentially facts that need to be ascertained to decide the issue.

- Whether the Pegasus suite of spyware was used on phones or other devices of the citizens of India to access stored data, eavesdrop on conversations, intercept information and/or for any other purposes not explicitly stated herein?
- The details of the victims and/or persons affected by such a spyware attack.
- What steps/actions have been taken by the Union of India after reports were published in the year 2019 about hacking of WhatsApp accounts of Indian citizens, using the Pegasus suite of spyware.
- Whether any Pegasus suite of spyware was acquired by the Union of India, or any State Government, or any central or state agency for use against the citizens of India?
- If any governmental agency has used the Pegasus suite of spyware on the citizens of this country, under what law, rule, guideline, protocol or lawful procedure was such deployment made?
- If any domestic entity/person has used the spyware on the citizens of this country, then is such a use authorised?
- Any other matter or aspect which may be connected, ancillary or incidental to the above terms of reference, which the Committee may deem fit and proper to investigate.

### Significance

- Court's insistence on transparency and disclosure by the Union government.
- The Government had sought to appoint the technical committee composed of members from the executive.
  - \* However, the court has not allowed it, saying "such a course of action would violate the settled judicial principle against bias, i.e., that 'justice must not only be done, but also be seen to be done'".

### How have other countries responded?

- Morocco, France and Israel have launched investigations and taken other measures to prevent the use of spyware.
- In several countries, there have been calls for investigations and efforts to hold governments accountable.

### Conclusion

- The Supreme Court's move for an independent probe is an important step towards fixing accountability and protecting citizens from unlawful surveillance.



## *Police Service*

### **5. The poor conditions of protectors**

- » Mains: Challenges being faced by the police force and its negative implications on their work

#### **Context:**

- The article discusses problems faced by the Police in India.

#### **Death and injury on duty**

- In 2020, a deputy commandant of Commando Battalion for Resolute Action (CoBRA) — a special unit of CRPF, was seriously injured when an Improvised Explosive Device (IED) planted by Maoists exploded.
- Assistant Commandant N. Purushottam Bhalerao succumbed to injuries, along with nine other commandos when an IED went off during an anti-Maoist operation.
- In 2021, two Rajasthan police constables were killed after suspected drug smugglers opened fire when the constables were carrying out routine checks of vehicles at checkpoints in the Bhilwara district.

#### **Police Commemoration Day**

- National Police Commemoration Day is observed on October 21 every year.
  - \* It is observed to salute the spirits of police forces and their families and brave police martyrs who lost their lives fighting for the country.

#### **History**

- The Police Commemoration Day remembers the ultimate sacrifice of 10 police personnel who lost their lives on October 21, 1959, in Ladakh while fighting the Chinese army.
- The Chinese army opened fire and threw grenades at the Indian police party which comprised 20 personnel. Apart from the 10 personnel who were martyred, seven were taken as prisoners and the remaining three managed to escape.
- The incident went down in the history of the forces as an example of unflinching loyalty to the nation, dedication to duty and daring of the highest order.

#### **Problems faced by the Police personnel**

Despite the onerous nature of their duties, the police are a neglected lot.

- Non-stop work, irregular hours, lack of exercise, insufficient rest and sleep take a hit on their health leading to stress-related diseases such as depression and obesity.

- Due to large vacancies in the police forces, a huge responsibility rests on the available personnel to maintain law and order.
- They get paid low salaries, have a poor quality of life and are often deprived of basic facilities.
- The canteen and medical facilities are dismal.
- Items sold through the Central Police Canteens are not exempted from GST.
- Those who cleared recruitment exams in 2003 but joined the force in 2004 or later are not eligible for pension under the old norms.

#### **Impact**

- Work-life imbalance affects their morale and motivation, impacting their performance.
- The gruelling and tedious work hour regime can also deter many otherwise right kind of individuals from making a choice for the police profession, thus adversely affecting the quality of the manpower available for recruitment.
- The overall frustration may result in rude and offensive behaviour.

#### **Way forward**

- There are notable variations in the ex-gratia amounts given to the next of kin of the police who are killed. While certain States like Delhi and Tamil Nadu pay ₹1 crore, several other States dither to pay even half that amount.
  - \* While the Centre pays ex-gratia to the families of the Central Armed Police Forces which may be short of ₹1 crore, the balance should be borne by the States as ₹1 crore is reasonably sufficient to see the family through hard days.
  - \* The Centre and the States need to bring about uniformity in the amount paid.
- Care should be taken to ensure that the next of kin are not deprived of a decent living. Payments from the public exchequer need to be made judiciously.

#### **Conclusion**

- It is high time the government takes note of the grievances of the police and paramilitary personnel and does not let their sacrifices go in vain.

## *Important Aspects of Governance*

### **6. PM orders drive to cut red tape**

- » Mains: Reforms in governance

#### **Context:**

- Prime Minister Narendra Modi has directed all government departments to have a fresh look at all existing processes and scrap unnecessary paperwork and compliances, as part of a special spring-cleaning exercise this month.

### Details:

- The timely and effective disposal of public grievances, references from MPs and State Governments, inter-ministerial consultations, parliamentary assurances, etc. is an important part of the work of Ministries and Departments.
  - \* Files must neither be prematurely destroyed nor kept for periods longer than necessary.
- During the special campaign, all-out efforts will be made to dispose of the identified pending references.
- The special campaign would be monitored by the Department of Administrative Reforms and Public Grievances (DARPG) in the Ministry of Personnel, Public Grievances and Pensions.
- Cabinet Secretary has asked each department to weed out old files, clear all pending public grievances and references from MPs and States, while endeavouring to meet any assurances made to Parliament as part of a special campaign.
- Secretaries have been asked to monitor the progress on resolving pending issues on a daily basis and send a weekly report to the DARPG.
- In addition, the existing processes would be reviewed with a view to reducing compliance burden, and unnecessary paperwork done away with, wherever feasible.

## Government schemes

### **7. No money left in MGNREGA coffers; 21 States in the red**

- » Prelims: MGNREGA- provisions

#### Context:

- Many states are running out of funds to continue timely payments under MGNREGA.

#### Details:

- The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) provides a legal guarantee for one hundred days of employment in every financial year to adult members of any rural household willing to do public work-related unskilled manual work at the statutory minimum wage. The Ministry of Rural Development (MRD), Government of India is monitoring the implementation of this scheme in close coordination with State Governments.

#### Overview:

- According to its own financial statement, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) scheme shows a negative net balance of Rs 8,686 crores.
- Close to 21 out of 35 states and UTs have already utilised over 100% of the allocated funds under MGNREGA for the financial year 2022 till October 29, 2021.

- Key states are showing a negative net balance with Andhra Pradesh, Tamil Nadu, and West Bengal faring the worst. Andhra Pradesh and Tamil Nadu had a negative balance of Rs 2,323 crores and Rs 1,999 crores respectively.

#### Reasons:

- The scheme was given a budget of ₹1.11 lakh crore in the previous financial year which provided critical support to close to 11 crore workers.
- However, the scheme's 2021-22 budget was set at ₹73,000 crores with the option of supplementary allocations in case of any insufficiency.
  - \* As of October 29, the total expenditure, including payments due had already reached ₹79,810 crores.
- Officials at the centre have also blamed State governments for using it as a supply-led scheme instead of a demand-driven one with many states asking the field authorities to artificially create the demand.

#### Impact:

- Payments of MGNREGA wages, as well as material costs, will be delayed unless the states use their own funds.
- It also increases the economic distress on poor and vulnerable households.
  - \* MGNREGA data shows that 13% of households who demanded work under the scheme were not provided work.
- A Supreme Court judgement in 2016 had described pending wage payments under MGNREGA as "a clear constitutional breach committed by the State" and "a modern form of begar".

#### Way ahead:

- Supplementary budget allocations will take another month at least till the next parliamentary session begins.
- A senior official of Rural Development Ministry has also emphasised that people will continue to get the work according to the demand. States can also provide temporary funds out of their own resources which could be reimbursed by the Centre once the funds are available.

## Important aspects of Governance

### **8. The need to move away from clientelism**

- » Mains: Difference between welfare initiatives and freebies/populism; Negative implications of freebie culture; recommendations

### **Background:**

- There has been a growing culture of freebies among the political parties in different states of India over the years particularly during the election season.
- This is directed towards focussing on electoral gains with such initiatives being primarily targeted at the party's core supporters and swing voters who could be influenced easily.
- The line between welfarism and populism has blurred.

### **Difference between welfare initiatives and freebies:**

- While welfare initiatives include measures such as targeted Public Distribution System, providing social security for labourers, quality education, fair employment, affordable healthcare, decent housing, and protection from exploitation and violence, freebies could include offers such as free rations, TV sets, laptops to students, free rides for women in buses, free gas cylinders and stoves and so on.
- Freebies are provided to attract voters to cast their vote in a particular election and unlike the welfare initiatives, they create only limited private benefit for the receiver and do not contribute towards strengthening public goods/facilities.

### **Impact of freebie culture and populism in India:**

#### **Neglect of welfare measures and its impacts:**

- Given the electoral effectiveness of the freebies culture, states seem to accord lesser importance to welfare initiatives and hence welfare measures have taken a back seat in terms of governance. There seems to be a withdrawal of the state in providing welfare measures such as social security, access to quality education and health, etc.
- The governments have not been taking concrete and constructive efforts to fulfil the aspirations of the people.
- The impact has been all the more severe on the poor and marginalised communities due to denial of access to their rightful share of state resources. Freebies drastically widen the gap between the rich and the poor.

#### **Violative of the constitutional mandate:**

- Freebies violate the constitutional mandate of extending benefits for public purposes and instead create private benefits.

\* Example: The distribution of free laptops does not serve the purpose of increasing the quality of education.

#### **Depoliticising the poor:**

- Populism encourages mediocre political critics and affects critical and rational thinking, which are important to hold the people in power accountable.

- Freebies thus depoliticise the poor and marginalised communities.

### **Impact on democratic polity:**

- Unsolicited freebies cultivate a patron-client syndrome and encourage personality cults in a democratic polity. This does not augur well for a democratic polity.
- The culture of freebies results in the treating of people like subjects whereas the democratic polity visualizes the citizens as being entitled to civil rights as constitutional guarantees.

### **Recommendations:**

- There is an urgent need to tackle the freebie culture in India, given its negative impacts. Also, there needs to be a reorientation of public policy in a healthy direction.
- The political party manifestos should offer programmatic policy interventions towards better public services than narrow private benefits in the form of freebies. They should focus on enhancing budgetary allocation for the maintenance of public infrastructures like schools, colleges, hostels and hospitals.
- The Election Commission and the Higher Judiciary intervention can help in this regard. An informed and aware citizenry is a must to bring about this change.

## **Issues relating to Poverty and Hunger**

### **9. Global Hunger Index**

- » Prelims: Global Hunger Index- parameters considered
- » Mains: India's performance; Concerns and recommendations
- Global Hunger Index is an index jointly released by Concern Worldwide and Welthungerhilfe every October.
- It aims to track hunger at the world, regional and country levels.
- The Hunger Index measures countries' performance on four component indicators – undernourishment, child wasting, child stunting and child mortality.

#### **Calculating GHI:**

GHI ranks countries on a 100-point scale, 0 representing zero/no hunger. 0 is the best possible score and 100 is the worst. The GHI scores are based on four indicators. Taken together, the component indicators reflect deficiencies in calories as well as in micronutrients. Thus, the GHI reflects both aspects of hunger (undernutrition and malnutrition).

1. UNDERNOURISHMENT: the share of the population whose caloric intake is insufficient.
2. CHILD STUNTING: the share of children under the age of five who have low height for their age.
3. CHILD WASTING: the share of children under the age of five who have low weight for their height.
4. CHILD MORTALITY: the mortality rate of children under the age of five (a reflection of the fatal mix of inadequate nutrition and unhealthy environments).

Undernourishment data are provided by the Food and Agriculture Organisation and child mortality data are sourced from the U.N. Inter-agency Group for Child Mortality Estimation. Child wasting and stunting data are drawn from the joint database of UNICEF, the World Health Organization and the World Bank, among others

#### **Context:**

- Global Hunger Index 2021 has been released.

#### **Key Findings:**

- The Index ranked India at the 101st position out of 116 countries.
- India is also among the 31 countries where hunger has been identified as serious.
- India ranked 94 among 107 countries in the Global Hunger Index (GHI) released in 2020.
- According to the Index, only 15 countries fare worse than India. They are Papua New Guinea (102), Afghanistan and Nigeria (103), Congo (105), Mozambique and Sierra Leone (106), Timor-Leste (108), Haiti (109), Liberia (110), Madagascar (111), Democratic Republic of Congo (112), Chad (113), Central African Republic (114), Yemen (115) and Somalia (116).
- India was also behind most of the neighbouring countries. Pakistan was placed at 92, Nepal and Bangladesh at 76 and Sri Lanka at 65.

#### **Issues with the evaluation:**

- Though the source of the data is from reputed sources, this does not mean that the GHI is free from inadequacies. Some of the major issues with the GHI are as follows:
  - \* The GHI is largely children-oriented with a higher emphasis on undernutrition than on hunger and its hidden forms, including micronutrient deficiencies. Thus it misses critical parameters in its consideration.
  - \* The calorie insufficiency component in particular is problematic for the following reasons.
    - » Lower calorie intake does not necessarily mean deficiency. Lower calorie intake may also result from reduced physical

activity, better social infrastructure (road, transport and healthcare) and access to energy-saving appliances at home.

- » The use of a uniform calorie norm fails to recognise differentiated calorie requirements at the State level. This could lead to a scenario where a large proportion of the population in Kerala and Tamil Nadu may get counted as calorie deficient despite them being better in nutritional outcome indicators thus leading to overestimation in such states. While in States that have a higher average level of calorie intake, such as Bihar and Uttar Pradesh, due to the high prevalence of communicable diseases and low level of mechanisation in the economy there may be an underestimation of calorie deficiency. Thus there are serious questions on the appropriateness of the calorie component of the GHI.
- » Notably, India has registered relatively better performance in the child mortality parameter. Despite studies suggesting that child undernutrition and mortality are usually closely related, as child undernutrition plays an important facilitating role in child mortality, India appears to be an exception in this regard. India's child mortality rate has been lower compared to Sub-Saharan African countries despite it having higher levels of stunting. This could be indicative of the availability of and access to better health facilities in India.

#### **India's poor record:**

- As per the latest data on calorie intake provided by the National Sample Survey Office consumption expenditure in India has declined between 2011-12 and 2017-18 by 4%. In rural India, it stands at about 10% per annum. This could be considered indicative of the increasing pressure on food security and corresponding deficiency in calorie intake.
- India's record in terms of reducing child undernutrition has been dismal. India's wasting prevalence (17.3%) is one among the highest in the world. Though child stunting in India declined from 54.2% in 1998-2002 to 34.7% in 2016-2020 it still remains way above the global average.
- COVID-19 has most likely exacerbated child undernutrition in general and child wasting in particular.

#### **Way forward:**

- The low rank on the Global Hunger Index should push India to look at its policies and interventions and ensure that they can effectively address the concerns raised by the findings.



Focus on countering stunting:

- A higher order of priority must be accorded to stunting over wasting as it is a stable indicator and does not oscillate with minor changes in circumstances, while wasting does.
  - \* Stunting is a chronic, long-term measure of undernutrition, while wasting is an acute, short-term measure. Child wasting can manifest as a result of an immediate lack of nutritional intake and sudden exposure to an infectious atmosphere.
- Effectively countering episodes of wasting is key to making sustained and quick progress in child nutrition.

Considering regional factors:

- Variations in wasting prevalence across the region should be estimated and understood. India should try to tackle wasting by effectively monitoring regions that are more vulnerable to socioeconomic and environmental crises.

# GEOGRAPHY

## *Geography - Important crops*

### 1. Cashew cultivation in India

- » Prelims: Cashew crop- Soil and climatic conditions required for cultivation
- Soil and climate
  - \* It grows up well in all soils. Red sandy loam is best suited. Plains as well as hill slopes upto 600 - 700 feet elevation are suitable.
- Season
  - \* June – December is optimum for cultivation.

#### A look at numbers

- The area under cashew (*Anacardium occidentale* L.) cultivation in India is around 10.11 lakh ha, the highest amongst all the cashew growing countries.
- The total annual production is approximately 7.53 lakh tonnes with several farmers dependent on it for their livelihood.

#### The production of cashew is hampered by several biotic as well as abiotic factors.

- Stem and root borer is one of the most debilitating pests as it is capable of killing even the grown-up trees within a short period.
- Besides pest infestation, cashew nut plantation in coastal India is affected by frequent intense cyclones, and each such devastation requires more than ten years to be restored.

## *Geography - Important crops*

### 2. Rains dent rubber output, imports to rise

- » Prelims: Major rubber producing states in India

#### Context

- Heavy rains in Kerala has disrupted rubber production.

#### How is it going to impact India?

- Supplies are constrained by a labour shortage and heavy rainfall has made tapping difficult which may force India to increase imports.

#### Rubber tree

- It is a quick-growing tall tree acquiring 20-30 meter height. It begins to yield latex in 5-7 years after planting.
- It requires a hot and humid climate with a temperature of 25°-35°C and annual rainfall of over 200 cm. The rainfall should be well distributed throughout the year.

#### Production in India

- Kerala is the largest producer of natural rubber.

#### Rubber Board

- It is a statutory body constituted by the Government of India, under the Rubber Act 1947, for the overall development of the rubber industry in the country.

It shall be the duty of the Board:

- To advise the Central Government on all matters relating to the development of the rubber industry, including the import and export of rubber.
- To advise the Central Government with regard to participation in any international conference or scheme relating to rubber.

## *Geography- Governmental initiatives*

### 3. Samudrayan

- » Prelims: Mission Samudrayan-Objectives; MATSYA 6000
- » Mains: Significance of the mission

#### Context

- Union Minister launched India's First and Unique Manned Ocean Mission Samudrayan at Chennai.

#### About Samudrayan:

- Samudrayan is India's first manned ocean mission.
- With this, India joined an elite club of nations having such underwater vehicles for carrying out subsea activities.
- This niche technology shall facilitate the Ministry of Earth Sciences, MoES in carrying out deep ocean exploration of the non-living resources such as polymetallic manganese nodules, gas hydrates, hydro-thermal sulphides and cobalt crusts, located at a depth between 1000 and 5500 meters.

- The preliminary design of the manned submersible MATSYA 6000 is completed and it will be operationalised with support from various organisations like ISRO, DRDO, and IITM.
  - \* Sea trials of 500 metre rated shallow water version of the manned submersible are expected to take place in the last quarter of 2022 and the MATSYA 6000, the deep water manned submersible will be ready for trials by the second quarter of 2024.
  - \* The manned submersible is designed to carry three persons in 2.1 meter diameter Titanium Alloy Personnel Sphere with an operational endurance of 12h and systems to support emergency endurance up to 96h.

#### **Significance of the development:**

- Underwater vehicles are essential for carrying out subsea activities such as high resolution bathymetry, biodiversity assessment, geo-scientific observation, search activities, salvage operation and engineering support.
- Even though unmanned underwater vehicles have improved manoeuvring and excellent vision systems resembling direct observation, manned submersible provides a feel of direct physical presence for researchers and has better intervention capability.

**Note:** - China developed a manned submersible named 'Fendouzhe' and it has currently touched ~11000m water depths.

### **Geography - Geology**

#### **4. Protecting India's natural laboratories**

- » Prelims: Geological heritage sites in India
- » Mains: Significance of geological heritage conservation and measures taken in this direction

#### **Background:**

India's geological diversity and heritage:

- India's geodiversity is unique. It is home to a variety of geological and physical elements of nature including mountains, valleys, coastlines, hot mineral springs, active volcanoes, diverse soil types, mineralised areas, and globally important fossil-bearing sites.
  - \* The Kutch region in Gujarat has numerous dinosaur fossils.
  - \* The Tiruchirappalli region of Tamil Nadu, originally a Mesozoic Ocean, houses Cretaceous (60 million years ago) marine fossils.
- India's geological history contributes to its geodiversity. The Indian landmass broke loose from the Gondwana or Gondwanaland supercontinent 150 million years ago and drifted

northwards for 100 million years until it settled under the southern margin of the Eurasian plate. The geological features and landscapes in India have evolved over billions of years through numerous cycles of tectonic and climate events.

- Given this geological diversity and heritage of India, it is long known as the world's 'natural laboratory' for geo-scientific learning.

#### **Efforts towards conservation of geological heritage:**

- In 1991 at a UNESCO-sponsored event, 'First International Symposium on the Conservation of our Geological Heritage', the Digne declaration was adopted. The declaration endorsed the concept of a shared geological heritage and declared the responsibility of the governments to act as their custodians.
- Later there was the establishment of geo-parks as sites that commemorate unique geological features and landscapes within their assigned territories; and as spaces that educate the public on geological importance. These sites also helped promote geo-tourism to generate revenue and employment.
- In the late 1990s, UNESCO facilitated efforts to create a formal programme promoting a Global Geoparks Network. Currently, there are 169 Global Geoparks across 44 countries.
  - \* India is also a signatory to the establishment of UNESCO Global Geoparks.

#### **Significance of geological literacy:**

- Geo-heritage sites would provide for acquiring of geological literacy.
- Such geological literacy will not only help one better understand the impact of physical geography on human culture but also provide valuable insights for dealing with some contemporary challenges like global warming.
  - \* The geological past, like the warmer intervals during the Miocene Epoch (23 to 5 million years ago), could serve as an analogue for future climate events. Geological literacy will make it easy for humans to memorialise past events of climate change and appreciate the adaptive measures to be followed for survival.

#### **Concerns:**

- The unhindered development process is leading to the destruction of India's geological heritage. Important geological sites like the ones at Anjar, Kutch district and the Lonar impact crater in Buldhana district of Maharashtra are under the grave threat of destruction and damage. Similarly, a national geological monument exhibiting a unique rock called Nepheline Syenite in Ajmer district of Rajasthan was destroyed in a road-widening project.

- \* The geological section at Anjar, Kutch district has a high concentration of iridium and could provide evidence for a massive meteoritic impact that caused the extinction of dinosaurs about 65 million years ago.
- The unplanned and booming real estate business is leading to encroachment of many geological heritage sites.
- Unregulated stone mining activities have also contributed to the damage and destruction of important geological sites.

#### Lacunae:

Lack of geological literacy in India:

- Disciplines like environmental science and geology have not received adequate attention in India.
- The lack of interest in the government and academic circles towards geological literacy is unfortunate and is contributing by some degree to the lackadaisical approach towards geological sites and their degradation and destruction.

Apathy towards geo-conservation:

- The concept of geo-conservation has not found much traction in India. Unlike countries like Vietnam and Thailand that have implemented laws to conserve their geological and natural heritage, India does not have any such legislation and policy for conservation. Previous attempts for such legislation have not been fructified.
- Despite being home to rich and varied geological heritage none of the 32 sites identified as National Geological Monuments by the Geological Survey of India (GSI) is recognised by UNESCO. This in part is reflective of the lack of seriousness on the part of the administration to comply with the guidelines for establishment of UNESCO Global Geoparks.

#### Recommendations:

- Preserving geological heritage is as important as safeguarding biodiversity and cultural heritage and requisite measures should be taken in this direction.
  - \* The government should come out with a national conservation policy and also constitute a national body for the protection of geo-heritage sites backed by suitable geo-conservation legislation.
  - \* Geo-conservation should be a major guiding factor in land-use planning.

### ***Geography - Geology***

#### **5. Scientists find a mineral seen in the depths of the Earth in a meteorite**

- » Prelims: Katol L6 chondrite meteorite; Bridgmanite

#### Context:

- The study led by IIT Kharagpur researchers on the Katol L6 Chondrite meteorite.
  - \* The meteorite had fallen near the town of Katol in Nagpur District of Maharashtra in 2012.

#### Details:

- The study reports for the first time, presence of veins of the mineral bridgmanite in the meteorite sample.
  - \* Bridgmanite is the most volumetrically abundant mineral in the interior of the Earth. It is present in the lower mantle (from 660 to 2700 km).
  - \* Bridgmanite consists of magnesium, iron, calcium and aluminum oxide and has a perovskite structure.
    - » A perovskite is any material with a crystal structure similar to the mineral called perovskite, which consists of calcium titanium oxide ( $\text{CaTiO}_3$ )
  - \* Notably, while the crystal structure of natural bridgmanite has been reported in other meteorites such as the Tenham and Suizhou meteorites, their chemical composition does not fully match with the terrestrial bridgmanite present in the Earth's interior.

#### Significance:

#### Understanding of the evolution of earth:

- The understanding of the formation of bridgmanite can help better comprehend the origin and evolution of planetary interiors including that of earth. Hence the study could help understand the formation and evolution of the Earth by helping understand high-pressure phase transformation mechanisms in the deep Earth.

#### Understanding of moon formation:

- The new finding adds evidence to the Moon-forming giant impact hypothesis.
  - \* As per the Moon-forming giant impact hypothesis, nearly 4.5 billion years ago, the Earth collided with a planet the size of Mars named Thela, and the force of this impact was so huge as to melt the Earth down from the surface to a depth of 750 km to 1,100 km leading to the formation of a magma ocean on earth. As per the hypothesis, the ejecta from the collision led to the formation of the Moon.



# MISCELLANEOUS

## 1. Banni Buffalo IVF

### Context:

- India's First Banni Buffalo IVF Calf Born.

### Details:

- India saw the birth of its first IVF calf of a Buffalo breed namely Banni, found primarily in Gujarat's Kutch region.
- The birth of the Banni Buffalo calf would open up doors for the mass production of the rare Banni Buffalo, which can withstand extreme weather conditions, survive in the water-scarce atmosphere and produce 16 litres of good quality milk in a day.
- Banni buffalo is also known as 'Kutchi' or 'Kundi' primarily found in Kutch. It is usually a rare breed preserved by the local community 'Maldharis'.
- Banni has a different genetic makeup as compared to common breeds, which allows for longer lactation periods, higher milk production potential.
- Unlike other varieties of buffalo, it can sustain harsh climatic conditions by consuming the naturally available grasses and can survive infrequent drought conditions, low humidity and high temperature.
- The process was carried out to enhance the number of genetically superior buffaloes to increase milk production.
- A cow can give birth to 50 calves on an average through IVF, as against its capacity to deliver a maximum of eight to 10 calves in its lifetime.
- India has more than 109 million buffaloes that is 56 per cent of the world's buffalo population.

## 2. Bhaskarabda to be added to official calendar of

### Assam

### What's in News?

- Bhaskarabda will be added to the Saka and Gregorian eras in the official calendar of the Assam Government.

### What is Bhaskarabda?

- Bhaskarabda is an era counted from the date of the ascension of a seventh-century local ruler.
- Bhaskarabda began when Bhaskaravarman was crowned ruler of the Kamrupa kingdom. He was a contemporary and political ally of northern Indian ruler Harshavardhana.

- Unlike Gregorian, where a day starts at midnight, the Assamese calendar begins and ends at sunrise over 24 hours.
- While the Gregorian goes by the solar cycle, the Saka and Bhaskarabda eras use a lunisolar system based on both the phases of the moon and the solar year.
- The gap between Bhaskarabda and Gregorian is 593 years.

## 3. Food Tech Summit 2021

### Context:

- Food Tech Summit 2021 organised by the Ministry of Food Processing Industries on 'World Food Day'.

### Details:

- The Food Tech Summit 2021 aimed at setting the stage for all food-tech stakeholders to impart, discuss and acquaint micro enterprises on the new emerging trends in food processing and technological innovation.
- The Food Tech Summit is one of a kind initiative by the Ministry of Food Processing Industries along with the support of distinguished industry experts to educate and guide the stakeholders to make informed decisions in order to scale up their food business in the present scenario.

### About World Food Day:

- October 16 is observed as World Food Day.
- It is an initiative by the Food and Agricultural Organisation (FAO) of the United Nations.
- This global event marks a day calling for worldwide awareness and collective action to combat the issue of hunger and ensure healthy diets for all.
- The theme this year is "Our actions are our future. Better production, better nutrition, better environment and a better life".
- World Food Day was established in 1979, as suggested by former Hungarian minister of agriculture and food Dr Pal Romany. It gradually became a way to raise awareness about hunger, malnutrition, sustainability and food production.

#### **4. Industrial Park Ratings System (IPRS) Report**

##### **Context:**

- 41 Industrial Parks have been assessed as “Leaders” in the Industrial Park Ratings System Report released by DPIIT.

##### **Details:**

- The Industrial Park Rating System Report 2.0 released by the Minister of State for Commerce & Industry is the second edition of the Report.
- The Report is an extension of the India Industrial Land Bank which features more than 4,400 industrial parks in a GIS-enabled database to help investors identify their preferred location for investment.
  - \* The portal is currently integrated with industry-based GIS system of 21 States and UTs and plot-wise information in these are updated on a real-time basis.
  - \* Pan-India integration is expected to be achieved by December 2021.
- The IPRS pilot exercise was launched in 2018, with an objective of enhancing industrial infrastructure competitiveness and supporting policy development for enabling industrialization across the country.

##### **IPRS 2.0:**

- IPRS 2.0 was developed with the following objectives:
  - \* To improve industrial infrastructure
  - \* Support EoDB reform agenda of providing transparent information
  - \* Enable states to showcase their strengths and promote investment in the state industrial ecosystem
  - \* Benchmark and identify gaps to structure interventions
  - \* Recognize best practices and promote competition among parks
  - \* Help industries to identify suitable investment destination through a single platform

#### **5. International Day of the Girl Child**

##### **Context:**

- International Day of the Girl Child is observed annually on October 11.

##### **About International Day of the Girl Child:**

- Declared by the United Nations, it was first observed in 2012. The day is dedicated to raising awareness on gender equality while assuring rights and improving opportunities for girls.

- The theme this year is “Digital generation. Our generation.”

#### **6. Nobel Prize in Literature**

Tanzanian novelist Abdulrazak Gurnah has won the 2021 Nobel Prize in Literature.

- The Nobel Prize has been awarded to him “for his uncompromising and compassionate penetration of the effects of colonialism and the fate of the refugee”.
- In his 10 novels he has consistently, and with great compassion, penetrated the effects of colonialism in East Africa and its effects on the lives of uprooted and migrating individuals.
- Gurnah is the first African writer to win the award since the Zimbabwean Doris Lessing in 2007, and only the second writer of colour from sub-Saharan Africa.

#### **7. Shanti Swarup Bhatnagar Prizes for Science and Technology**

##### **Context:**

- Shanti Swarup Bhatnagar prizes were conferred.

##### **About the prize**

- Prizes awarded annually for notable and outstanding research, applied or fundamental, in the following disciplines: (i) Biological Sciences, (ii) Chemical Sciences, (iii) Earth, Atmosphere, Ocean and Planetary Sciences, (iv) Engineering Sciences, (v) Mathematical Sciences, (vi) Medical Sciences and (vii) Physical Sciences.
- Any citizen of India engaged in research in any field of science and technology up to the age of 45 years and Overseas citizen of India (OCI) and Persons of Indian Origin (PIO) working in India are eligible.

##### **About Dr Shanti Swarup Bhatnagar**

- Dr Shanti Swarup Bhatnagar was the Founder Director (and later first Director General) of Council of Scientific & Industrial Research (CSIR) who is credited with establishing twelve national laboratories in as many years.
- Dr Bhatnagar played a significant role in building of post-independent S & T infrastructure and in the formulation of India's S & T policies.
- Dr Bhatnagar concurrently held number of important position in the Government. He was the first Chairman of the University Grants Commission (UGC).
- He was Secretary, Ministry of Education and Educational Adviser of Government. He was the first Secretary to Ministry of Natural Resource & Scientific Research and also Secretary of Atomic

Energy Commission. He played an instrument role in the establishment of the National Research Development Corporation (NRDC) of India.

## **8. World's largest Khadi National Flag**

- The world's largest Khadi national flag was installed in Leh, Ladakh, on the occasion of Mahatma Gandhi's 152nd birth anniversary
- The tricolor, which is 225-feet long and 150-feet wide, weighs around 1,000 kg
- It has been prepared by the 57 Engineer Regiment of the Indian Army
- The flag has been made by Khadi and Village Industry Commission (KVIC)

## **9. World Postal Day**

### **Context:**

- World Post Day is celebrated each year on 9th of October.

### **About World Postal Day:**

- World Post Day is celebrated each year on 9th of October to mark the anniversary of establishment of the Universal Postal Union in 1874.
- The purpose of World Postal Day is to create awareness about the role of the postal sector in the lives of people and businesses as well as contribution to the socio-economic development of countries.
- The Day was first declared by the UPU Congress held in Tokyo, Japan, in 1969.
- The theme for this year's World Postal Day is 'Innovate to recover'.
- India celebrates 'National Postal Week' from 9 to 15 October.

### **Background**

- In 1874, the Treaty of Bern resulted in the formation of the Universal Postal Union (UPU) that coordinates postal policies among its member nations along with the worldwide postal service. After the formation of the United Nations, the UPU became one of its specialized agencies in 1948.
- It also oversees the Telematics and Express Mail Service (EMS) cooperatives. Each member agrees to the same terms for conducting international postal duties.
- UN's Universal Postal Union (UPU) is the second oldest international organization worldwide.
- India joined the Universal Postal Union (UPU) in 1876.

## **Universal Postal Union (UPU) Functions**

The Universal Postal Union (UPU) was established as a body overlooking the regulation of postal exchange between countries.

- It frames rules for international mail exchange and fixes rates for International postal services.
- It helps to ensure a truly universal network of up-to-date products and services.
- UPU provides recommendations for growth in mail, parcel and financial services and to improve the customer's quality of service.

# PRACTICE QUESTIONS

**1. The recently launched DigiSaksham is:**

- A. A digital skills programme to enhance the employability of youth by imparting digital skills.
- B. A Scheme aimed at providing encouragement and support to specially-abled children to pursue Technical Education.
- C. A scheme aimed at making people in rural areas, across States/UTs, digitally literate.
- D. A digital wallet that enables storage and access to educational documents, health records, certificates electronically.

**2. Consider the following statements with respect to Account Aggregator (AA) framework:**

- 1. It is a consent-based financial data sharing that would allow individuals and small businesses to access, control, and share personal data with third-party institutions.
- 2. AAs were created through an inter-regulatory decision by RBI, SEBI, IRDAI, PFRDA and FSDC.
- 3. RBI licenses and governs rules for AAs.

Which of the given statements is/are correct?

- A. 2 only
- B. 1 and 3 only
- C. 1, 2 and 3
- D. None of the above

**3. It is the largest Nuclear Power station in India and is operated by Nuclear Power Corporation of India Limited. It is the result of an inter-governmental agreement between India and Russia.**

The Nuclear Power generation facility being talked about is:

- A. Kalpakkam Nuclear Power Plant
- B. Kudankulam Nuclear Power Plant
- C. Kaiga Nuclear Power Plant
- D. Kakrapar Atomic Power Station

**4. Which of the following is/are NOT among the eligibility criteria to become a Supreme Court judge as envisaged in the Article 124 of the Indian Constitution?**

- 1. Only an Indian Citizen not exceeding 65 years of age is eligible.

- 2. The person should serve as a judge of one high court or more continuously, for at least 10 years or the person should be an advocate in the High court for at least 10 years or a distinguished jurist.

Options:

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

**5. With reference to the history of India, consider the following pairs:**

- 1. Aurang: In-charge of treasury of the State
- 2. Banian: Indian agent of the East India Company
- 3. Mirasidar: Designated revenue payer to the State

Which of the pairs given above is/are correctly matched? [UPSC 2020]

- A. 1 and 2 only
- B. 2 and 3 only
- C. 3 only
- D. 1, 2 and 3

**6. Which of the following statements about Type 1 and Type 2 diabetes is/are correct?**

- 1. There are no known prevention methods for Type 1 diabetes, while a healthy lifestyle can prevent Type 2 diabetes.
- 2. In Type 1 diabetes the body is producing insulin but not enough of it or it does not use it efficiently, whereas in Type 2 it is no longer able to produce insulin.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**7. With respect to Juvenile Justice Act (JJ Act), which of the following statements is/are incorrect?**

- 1. It mandates automatic termination of inquiries against a minor alleged to be in conflict with law in case of "petty offences" if the probe remains "inconclusive" even after four months, and a maximum extension of two months.



2. "Petty Offences" include the offences for which the maximum punishment under the Indian Penal Code or any other law for the time being in force is imprisonment up to one year and "Serious Offences" include imprisonment between one to three years.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**8. Consider the following statements about National Mineral Development Corporation (NMDC):**

- 1. It is India's largest iron ore producer and exporter.
- 2. It is a Navratna Company under the administrative control of the Ministry of Steel.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both
- D. None

**9. Which of the following statements is/are correct?**

- 1. In India and the USA, both a citizen by birth as well as a naturalised citizen are eligible for the office of President.
- 2. Citizenship is a matter dealt with by the Ministry of External Affairs in the Government of India.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**10. Bio Carbon Fund Initiative for Sustainable Forest Landscapes is managed by the**

- A. Asian Development Bank
- B. International Monetary Fund
- C. United Nations Environment Programme
- D. World Bank

**11. Consider the following statements with respect to "Langa & Manganiar":**

- 1. They are folk artists, famous for their folk dance called "Kalbeliya".
- 2. They are Muslim communities predominantly residing in Ladakh.
- 3. They play a traditional percussion instrument called "Khartal".

Which of the given statement/s is/are correct?

- A. 1 and 3 only
- B. 2 only
- C. 3 only
- D. 1, 2 and 3

**12. In which of the following states can Gangetic River dolphins be found?**

- 1. Assam
- 2. Uttar Pradesh
- 3. Rajasthan
- 4. Jharkhand
- 5. West Bengal

Options:

- A. 2, 4 and 5 only
- B. 1, 2 and 4 only
- C. 4 and 5 only
- D. 1, 2, 3, 4 and 5

**13. Uronema africanum Borge, recently seen in news, is:**

- A. An alga that can digest low density plastic sheets.
- B. An oil eating bacteria.
- C. A soil fungus, which uses enzymes to rapidly break down plastic materials.
- D. A bacterium that can aid the production of bio plastics.

**14. Which of the given statement/s is/are INCORRECT with respect to The Indian Astronomical Observatory (IAO), located in Hanle in Ladakh:**

- 1. It has one of the world's highest located sites for optical, infrared and gamma-ray telescopes.
- 2. It houses Asia's largest fully steerable optical telescope.
- 3. Night observations at IAO Hanle from 2m-Himalayan Chandra Telescope (HCT) are possible throughout the year without any interruption due to monsoon.

Options:

- A. 1 and 3 only
- B. 2 only
- C. 1 and 2 only
- D. None of the above

**15. Which one of the following best describes the term "Merchant Discount Rate" sometimes seen in news? (UPSC-2018)**

- A. The incentive given by a bank to a merchant for accepting payments through debit cards pertaining to that bank.
- B. The amount paid back by banks to their customers when they use debit cards for financial transactions for purchasing goods or services.
- C. The charge to a merchant by a bank for accepting payments from his customers through the bank's debit cards.
- D. The incentive given by the Government, to merchants for promoting digital payments by their customers through Point of Sale (PoS) machines and debit cards.

**16. The battle of Saraighat was fought in 1671 between**

- A. British and Burmese empires
- B. Bakhtiar Khilji and Kamata kingdom
- C. Kukis in the Northeast and the British
- D. Ahoms of Assam and the Mughals

**17. Consider the following pairs:**

<b>Tiger Reserve</b>	<b>State</b>
1. Indravati	Chhattisgarh
2. Valmiki	Bihar
3. Kawal	Telangana
4. Mudumalai	Tamil Nadu

Which of the above pairs is/are correctly matched?

- A. 1 and 4 only
- B. 2, 3 and 4 only
- C. 2 and 3 only
- D. 1, 2, 3 and 4

**18. Kudavolai during the Chola Rule refers to**

- A. Land Revenue System
- B. Administrative Divisions
- C. Military establishment
- D. System to elect members

**19. Consider the following statements:**

- 1. It is one of the deepest natural harbours in the world, developed by the British during World War II.
- 2. It is on the northeastern coast of Sri Lanka.

The above statements best describe:

- A. Oluvil Harbour
- B. Port of Galle
- C. Port of Colombo
- D. Trincomalee Harbour

**20. When a bill is referred to a joint sitting of both the Houses of the Parliament, it has to be passed by**

- A. A simple majority of members present and voting
- B. Three-fourths majority of members present and voting
- C. Two-thirds majority of the Houses
- D. Absolute majority of the Houses

**21. With respect to Narcotic Drugs and Psychotropic Substances Act, which of the following statements is/are correct?**

- 1. Every offence punishable under this Act shall be cognizable.
- 2. It is mandatory for the judge to award the Death penalty for certain offences after a previous conviction.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**22. Consider the following statements:**

- 1. Killing any animal in a manner required by the religion of any community is not an offence under the Prevention of Cruelty to Animals Act.
- 2. Prohibiting the slaughter, of cows and calves and other milch and draught cattle, falls under the Gandhian Principles of DPSP as part of Article 48.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both
- D. None

**23. Which amongst the following statements is the best description of Ex Milan?**

- A. India, Thailand and Singapore annual trilateral exercise
- B. Naval exercise between United Arab Emirates (UAE) and India
- C. Multilateral naval exercise hosted by the Indian Navy
- D. Naval exercise in the Indo-Pacific region by India, USA and Japan

**24. The Nobel Prize in Physiology or Medicine 2021 was awarded jointly to David Julius and Ardem Patapoutian for their discoveries of**

- A. how cells sense and adapt to oxygen availability
- B. receptors for temperature and touch
- C. cancer therapy by inhibition of negative immune regulation
- D. concerning a novel therapy against infections caused by roundworm parasites

**25. Which one of the following books of ancient India has the love story of the son of the founder of Sunga dynasty?**

- A. Swapnavasavadatta
- B. Malavikagnimitra
- C. Meghadoota
- D. Ratnavali

**26. Which of the following statements is/are correct regarding the Ayushman Bharat scheme?**

- 1. The National Health Authority is the agency responsible for implementing the scheme.
- 2. The scheme doesn't cover major illnesses such as Cancer.
- 3. Learning from the Covid pandemic, the scheme now also covers the treatment for Black Fungus.

Options:-

- A. 1 only
- B. 1 and 2 only
- C. 1 and 3 only
- D. 1, 2 and 3

**27. Which of the following nations is a member of Quad, but not a member of AUKUS?**

- A. India
- B. UK
- C. USA
- D. Australia

**28. Which of the following statements is/are correct regarding the transfer of judges of High Courts in India?**

- 1. The President can transfer the judges of the High Court, based on the recommendations of the Collegium.
- 2. The decision to transfer the High Court judges isn't open to judicial review.
- 3. The Governors of the states involved are also consulted by the President before the transfer order is given.

Options:-

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 1, 2 and 3

**29. The '13th amendment' to the Sri Lankan Constitution, often seen in the news, deals with –**

- A. Non-interference by other nations in internal affairs of Sri Lanka
- B. Power devolution to provincial councils established to govern the nation's nine provinces
- C. Universal adult franchise
- D. Control over the nation's Exclusive Economic Zone

**30. The 'Senkaku islands', often seen in the news, are a part of the territorial dispute between**

- A. China & South Korea
- B. Japan & North Korea
- C. China & Japan
- D. South Korea & North Korea

**31. Building 'Kalyana Mandapas' was a notable feature in the temple construction in the kingdom of (UPSC-2019)**

- A. Chalukya
- B. Chandela

- C. Rashtrakuta
- D. Vijayanagara

**32. Consider the following statements with regards to RTS,S/AS01 (RTS,S) malaria vaccine and choose the correct ones:**

1. It is the first-ever anti-malarial vaccine recommended by the WHO.
2. The vaccine specifically aims to cover children in sub-Saharan Africa.
3. The vaccine has been developed by GlaxoSmithKline (GSK) and forms an essential part of WHO's E-2025 initiative.

Options:-

- A. 1 only
- B. 1 and 2 only
- C. 1 and 3 only
- D. 1, 2 and 3

**33. The 2021 Nobel prize for Physiology or Medicine was awarded to researchers David Julius and Ardem Patapoutian for their work on how human body perceives temperature and pressure. In their research, they found out that the body's receptor for heat only gets activated**

- A. Above 40 degrees C
- B. Above 28 degrees C
- C. Above 35 degrees C
- D. Above 45 degrees C

**34. Which of the following statements is/are incorrect regarding the Appellate authority which is a part of WTO's dispute resolution mechanism?**

1. It is an ad-hoc body of seven members and acts as an appellate court for hearing appeals from decisions given by the WTO panels.
2. The authority has not been working since 2019 since China has vetoed every proposal to fill in the existing vacancies.
3. At least 5 people are required to preside over an appeal.

Options:-

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 1, 2 and 3

**35. Consider the following statements with regards to reservation in promotions and choose the correct ones:**

1. Article 16(4A) provides that the State can make any provision for reservation in matters of promotion in favour of the Scheduled Castes and the Scheduled Tribes if they are not adequately represented in the services under the State.
2. Article 16(4B), added by the 81st Constitutional Amendment Act, 2000, enabled the unfilled SC/ST quota of a particular year to be carried forward to the next year.
3. The SC in 2020 ruled that reservation in the matter of promotions in public posts is not a fundamental right.

Options:-

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**36. Which of the following is not a Harappan site?**

- A. Chanhudaro
- B. Kot Diji
- C. Sohgauna
- D. Desalpur

**37. Consider the following statements with regards to SC120-LOX semi-cryogenic tank and choose the correct one(s).**

1. It has been developed by Hindustan Aeronautics Limited.
2. It intends to increase the payload capacity in the existing Mk-III launch vehicle.
3. The newly developed tank would especially play an important role in the upcoming Gaganyaan project.

Options:-

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 1, 2 and 3



**38. Consider the following statements with regards to the EWS quota as it applies to the NEET exam.**

1. The individual's income for inclusion in the EWS quota must be under Rs. 8 lakh per annum.
2. 102nd Constitutional Amendment Act, 2018 led to the introduction of EWS reservation.
3. For inclusion under this criteria, the family should not own agricultural land of size 3 acres or more.

Which of these statements is/are incorrect?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**39. Which of the following security forces is responsible for securing India's border with Nepal?**

- A. Indo Tibetan Border Police
- B. Sashastra Seema Bal
- C. Border Security Force
- D. Assam Rifles

**40. Consider the following statements with regard to Multidimensional Poverty Index and choose the correct ones.**

1. The index is published annually by Oxford Poverty and Human Development Initiative and United Nations Development Programme.
2. The three dimensions included in the index are Health, Education and Living Standard.
3. All the UN member nations are included in the index to get a holistic view.

Options:-

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**41. With regard to India's joint military exercises with different nations, which of the following is/are not correctly matched?**

- |             |                  |
|-------------|------------------|
| 1. Mongolia | Nomadic Elephant |
| 2. Thailand | Maitree          |
| 3. UK       | Vajra Prahar     |
| 4. Nepal    | Surya Kiran      |

Options:-

- A. 1 & 2 only
- B. 3 only
- C. 1 & 4 only
- D. All of the above

**42. Recently, there was a growing awareness in our country about the importance of Himalayan mettle (*Girardinia diversifolia*) because it is found to be a sustainable source of (UPSC 2019)**

- A. Anti-malarial drug
- B. Biodiesel
- C. Pulp for paper industry
- D. Textile fibre

**43. With reference to the Tata Sons winning the bid to acquire Air India, consider the following statements and choose the correct one(s).**

1. Talace Pvt. Ltd. has been officially declared as the winning bidder in the process.
2. As per the agreement, the Tatas will now own 100% stake in Air India and 76% stake in its international low cost arm Air India Express.
3. With this acquisition, the Tatas will also own the pending debt of Air India.

Options:-

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 1, 2 and 3

**44. Consider the following statements with regards to the 'Lateral entry' program run by the Government of India:**

1. Reservations or caste-based quotas do not apply to these recruitments.
2. The recruitment under this program does not involve any written test.
3. The basic qualification for a Joint Secretary lateral entrant is 15 years of work experience.

Which of these statements is/are correct?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**45. Nations across the world have been contemplating imposing a minimum permissible level of corporate tax in order to counter tax havens. Which of the following rates of minimum corporate tax has been decided by these nations?**

- A. 23%
- B. 15%
- C. 20%
- D. 18%

**46. Which of the following statements regarding RBI's G-SAP operations is not correct?**

- A. It involved the RBI buying government securities from the market.
- B. It was launched to restrict the availability of liquidity in the market and thus control inflation.
- C. This was launched during the Covid-19 outbreak.
- D. None of the above.

**47. With reference to Mian Tansen, which one of the following statements is not correct? (UPSC 2019)**

- A. Tansen was the title given to him by Emperor Akbar.
- B. Tansen composed Dhrupads on Hindu gods and goddesses.
- C. Tansen composed songs on his patrons.
- D. Tansen invented many Ragas.

**48. Which of the given statement/s is/are correct:**

- 1. China's Chang'e-5 brought back lunar samples from Oceanus Procellarum region of the moon.
- 2. One of the objectives of Chang'e-5 was to study the volcanic activity on the surface of the moon.
- 3. The United States of America, the Soviet Union, China and India are the only countries to have successfully brought back lunar samples to Earth.

Options:

- A. 1 and 3 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. None of the above

**49. Which among the following greatly depend on wind conditions during migration?**

- 1. Globe skimmer dragonflies
- 2. Jacobin Cuckoo
- 3. Amur Falcon

Options:

- A. 1 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. 1, 2 and 3

**50. Which of the given statement/s is/are correct?**

- 1. Mahatma Gandhi's first Ashram in India was established on the banks of the river Sabarmati.
- 2. The meeting of the Working Committee of congress in 1930 at Sabarmati Ashram, invested Gandhiji with the power to launch the Civil Disobedience Movement at a time and place of his choice.

Options:

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

**51. Olivine is the most abundant component in the Earth's**

- A. Inner Core
- B. Upper Mantle
- C. Crust
- D. Atmosphere

**52. The Global Infrastructure Facility is a/an:**

- A. ASEAN initiative to upgrade infrastructure in Asia and financed by credit from the Asian Development Bank.
- B. World Bank collaboration that facilitates the preparation and structuring of complex infrastructure Public-Private Partnerships (PPPs) to enable mobilization of private sector and institutional investor capital.
- C. Collaboration among the major banks of the world working with the OECD and focused on expanding the set of infrastructure projects that have the potential to mobilize private investment.
- D. UNCTAD funded initiative that seeks to finance and facilitate infrastructure development in the world.

**53. Consider the statements as criteria given by the Indian Meteorological Department (IMD) for Heat Waves:**

1. Heat Wave is considered if the maximum temperature of a station reaches at least 40°C for Plains and at least 30°C for Hilly regions.
2. A heat wave will be declared if there is a departure of 4.5 degrees C to 6.4 degrees C from the normal temperature.
3. A departure above 6.4 degrees C is regarded as a severe heat wave.
4. The above criteria have to be met for at least two consecutive days.

Which of these statements is correct?

- A. 1 & 2 only
- B. 2, 3 & 4 only
- C. 3 & 4 only
- D. All of the above

**54. Consider the following statements with regards to Jim Corbett National Park:**

1. It was India's first National Park.
2. It was set up as Ramganga National Park and was only given its current name in 1956, after Jim Corbett, the hunter-turned-naturalist.
3. In 1973, the park became the launchpad of Project Tiger – India's first tiger protection programme.

Which of these statements is/are not correct?

- A. 1 & 2 only
- B. 2 only
- C. 3 only
- D. All of the above

**55. Arrange the following in decreasing order of their contribution to India's greenhouse gas emissions:**

1. Transport
2. Agriculture
3. Electricity production
4. Waste management

Options:

- A. 2>3>1>4
- B. 1>3>2>4
- C. 3>2>1>4
- D. 2>3>4>1

**56. Consider the following statements with regards to the new railway line between Jaynagar in Bihar and Bardibas in Nepal:**

1. This is Nepal's first-ever broad gauge passenger service.
2. The line has been built by Indian engineering major, IRCON.
3. The operations and maintenance of the line will be the responsibility of Konkan Railway Corporation Limited.

Options:

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**57. Consider the following statements:**

1. The 44th Amendment to the Constitution of India introduced an Article placing the election of the Prime Minister beyond judicial review.
2. The Supreme Court of India struck down the 99th Amendment to the Constitution of India as being violative of the independence of the judiciary.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

**58. Consider the following statements:**

1. The Chief Justice of India may, after consultation with the collegium, transfer a Judge from one High Court to any other High Court.
2. Only the transferred judge and no one else is entitled to file a case challenging such transfer.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both
- D. None

**59. With reference to OneWeb, which of the following statements is/are correct?**

1. It is a Public Sector Undertaking (PSU) of the Government of India and commercial arm of the Indian Space Research Organisation (ISRO).

2. The main objective is to scale up industry participation in Indian space programmes.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**60. Which of the following statements is/are correct?**

1. The National Commission for Minorities (NCM) does not have the authority to declare any community as a minority.

2. In case of admission of the student, minority educational institutions can have a reservation of up to 50 per cent for the student of their own community.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**61. With respect to International Energy Agency (IEA), which of the following statements is/are correct?**

1. India is a founding member of the IEA.

2. Membership in the IEA is restricted to advanced economy members of the Organization for Economic Co-operation and Development (OECD).

3. The World Energy Outlook is published by IEA.

Options:

- A. 1 and 2 only
- B. 2 only
- C. 2 and 3 only
- D. 1 and 3 only

**62. The term 'Core Banking Solutions' is sometimes seen in the news. Which of the following statements best describes/describe this term? (UPSC 2016)**

1. It is a networking of a bank's branches which enables customers to operate their accounts from any branch of the bank on its network regardless of where they open their accounts.

2. It is an effort to increase RBI's control over commercial banks through computerization.

3. It is a detailed procedure by which a bank with huge non-performing assets is taken over by another bank.

Select the correct answer using the code given below.

- A. 1 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

**63. Which of the following statements is correct with regard to the G20?**

A. It was formed primarily to focus on climate change and environmental issues in 20 major economies.

B. It comprises 19 countries and the European Union.

C. G20 countries conduct annual joint military exercises in the Mediterranean Sea.

D. Russia was recently removed from the group.

**64. Recently the term 'PM Gati Shakti' was seen in news. What does it refer to?**

A. National master plan for multimodal connectivity and integrated infrastructure development.

B. Financial inclusion programme aimed at North-Eastern states.

C. Livelihood generation scheme for migrant workers affected by the pandemic.

D. A public-private partnership in the commercial space sector.

**65. Which of the following statements is/are correct?**

1. Extended Producer Responsibility (EPR) is a policy approach related to waste management.

2. Under this policy, producers are given significant responsibility for the treatment or disposal of post-consumer products.

3. India is opposed to this policy and it is limited to European countries.

Options:

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 1, 2 and 3



**66. The Nutrient Based Subsidy Rates for non-urea fertilizers are approved by -**

- A. Ministry of Finance
- B. NITI Aayog
- C. Ministry of Agriculture
- D. Cabinet Committee on Economic Affairs

**67. With reference to the recent developments in science, which one of the following statements is not correct?**

- A. Functional chromosomes can be created by joining segments of DNA taken from cells of different species.
- B. Pieces of artificial functional DNA can be created in laboratories.
- C. A piece of DNA taken out from an animal cell can be made to replicate outside a living cell in a laboratory.
- D. Cells taken out from plants and animals can be made to undergo cell division in laboratory petri dishes.

**68. Which of the following military exercises involve India and USA?**

- 1. Malabar
- 2. Yudh Abhyas
- 3. Vajra Prahar

Options:

- A. 1 only
- B. 1 and 2 only
- C. 1 and 3 only
- D. 1, 2 and 3

**69. Which of the following statements is/are correct?**

- 1. The Border Security Force (BSF) is the designated border guarding force for all the international borders of India.
- 2. It falls under the administrative control of the Ministry of Defence.
- 3. Recently, its jurisdiction has been set up to 10kms from the international border.

Options:

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. None of the above

**70. The "One Sun, One World, One Grid" (OSOWOG) is an initiative of which country?**

- A. USA
- B. Japan
- C. Germany
- D. India

**71. The strategic Bandar Abbas port is located in which country?**

- A. Pakistan
- B. Iran
- C. Afghanistan
- D. Oman

**72. Consider the following pairs:**

Tradition	State
1. Chapchar kut festival	Mizoram
2. Khongiom parba ballad	Manipur
3. Thang-Ta dance	Sikkim

Which of them is/are correctly matched?

- A. 1 only
- B. 1 and 2
- C. 3 only
- D. 2 and 3

**73. With regards to elections in India, consider the following statements and choose the incorrect ones:**

- 1. The state election commissions are responsible for conducting elections to the respective state legislatures.
- 2. The NRIs are allowed to vote in the parliamentary elections at the respective Indian embassies.
- 3. E-voting is allowed only for service voters in India.

Options:

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**74. Tuberculosis disease is caused by**

- A. Parasite
- B. Virus
- C. Bacteria
- D. Fungi

**75. If Thomas Cup is to Badminton, Uber Cup is to**

- A. Football
- B. Golf
- C. Badminton
- D. Basketball

**76. Consider the following statements with regards to the Forest Conservation Act, 1980:**

1. The Supreme Court, in TN Godavarman Thirumulpad versus Union of India and Others (1996), have defined forest as, all areas which are recorded as 'forest' in any government record, irrespective of ownership, recognition and classification.
2. The Act restricts the state government and other authorities to take decisions first without permission from the central government.
3. The Forest Conservation Act gives complete authority to the Central government to carry out the objectives of the act.

Which of these statements is/are correct?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**77. With reference to the Constitution of India, consider the following statements: (2019)**

1. No High Court shall have the jurisdiction to declare any central law to be constitutionally invalid.
2. An amendment to the Constitution of India cannot be called into question by the Supreme Court of India.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

**78. Kuakhai River is a distributary of which amongst the following Rivers?**

- A. Vamsadhara
- B. Subernarekha
- C. Brahmani
- D. Mahanadi

**79. With reference to Sea grasses, which of the following statements is/are correct?**

1. Antarctica is the only continent without sea grasses
2. Sea grasses reproduce through both sexual and asexual methods
3. Sushi is made from Sea grasses

Options:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

**80. Consider the following statements with respect to Khair (Acacia catechu):**

1. It is a deciduous tree widely distributed throughout the greater part of India except the most humid, cold and the driest regions
2. The tree is known for its medicinal properties and helps in curing skin problems

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both
- D. None

**81. Article 311 of the Indian Constitution deals with**

- A. Tenure of office of persons serving the Union or a State
- B. Dismissal, removal or reduction in rank of persons employed in civil capacities under the Union or a State
- C. Recruitment and conditions of service of persons serving the Union or a State
- D. Power of Parliament to vary or revoke conditions of service of officers of certain services

**82. Regarding the taxation system of Krishna deva, the ruler of Vijaynagar, consider the following statement (UPSC-2016)**

1. The tax rate on land was fixed depending on the quality of the land
2. Private owners of workshops paid an industries tax

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

**83. Consider the following statements:**

1. Article 17 is an Absolute Right.
2. Primary responsibility for the prevention of atrocities against SC/ST under Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, rests with the Central Government.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both
- D. None

**84. With respect to Sir Syed Ahmad Khan, which of the following statements is/are correct?**

1. He is the founder of the Aligarh Muslim University (AMU).
2. He was awarded the Kaisar-i-Hind for his contribution to Indian education.
3. He was critical of the Indian National Congress ever since its formation.

Options:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

**85. Which of the following statements is/are correct?**

1. Unorganised workers are essentially those who do not have the benefit of pension, provident fund, gratuity, maternity leave etc. and work mostly on daily/hourly wages.
2. The unorganized workers do not receive sufficient attention from the trade unions.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**86. Marib, recently seen in the news, is in which country?**

- A. Iran
- B. Afghanistan
- C. Yemen
- D. Lebanon

**87. Consider the following statements: [UPSC 2016]**

1. New Development Bank has been set up by APEC.
2. The headquarters of New Development Bank is in Shanghai.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

**88. Consider the following statements with respect to the polar bear:**

1. It is a hyper carnivore animal.
2. Its IUCN status is 'Vulnerable'.
3. Polar bears do not feed on penguins because they have a symbiotic relationship.

Which of the above statements is/are correct?

- A. 1 only
- B. 1 and 2 only
- C. 2 only
- D. 1, 2 and 3

**89. With respect to the Governor of a State, which of the following statements is/are correct?**

1. The appointment of State Governors by the Centre is a feature borrowed from the Government of India Act of 1935.
2. The appointment of the same person as Governor for two or more States was introduced under the 7th Constitutional Amendment Act, 1956.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**90. Which of the following statements is/are correct?**

1. Cabinet Committees find a mention in the Constitution under Article 77.
2. Appointments Committee of the Cabinet (ACC) is composed of the Prime Minister of India and the Minister of Home Affairs.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**91. Consider the following statements:**

1. The retreating southwest monsoon season is marked by clear skies and a rise in temperature.
2. The weather in the retreating monsoon is dry in north India but it is associated with rain in the eastern part of the Peninsula.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both
- D. None

**92. What was the main reason for the split in the Indian National Congress at Surat in 1907?**

- A. Introduction of communalism into Indian politics by Lord Minto
- B. Extremists' lack of faith in the capacity of the moderates to negotiate with the British Government
- C. Foundation of Muslim League
- D. Aurobindo Ghosh's inability to be elected as the President of the Indian National Congress

**93. Consider the following GM crops and choose the ones which are not legally allowed to be cultivated in India.**

1. Rice
2. Brinjal
3. Cotton

4. Mustard

Options:-

- A. 1 & 2 only
- B. 1 & 4 only
- C. 1, 2 & 4 only
- D. All of the above

**94. Consider the following statements with regards to di-ammonium phosphate:**

1. DAP is the most commonly used fertilizer in India.
2. DAP (46% P, 18% N) is the preferred source of Phosphorus for farmers while urea is the preferred nitrogenous fertilizer.
3. Farmers normally apply this fertilizer just before or at the beginning of sowing, as it is high in phosphorus (P) that stimulates root development.

Which of the above statements is/are correct?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**95. INSACOG, recently seen in the news, is**

- A. ISRO's latest satellite to join the IRNSS navigation system
- B. CDAC's latest supercomputer focusing on cognitive learning
- C. Consortium of labs focusing on finding genome sequencing of SARS-CoV2
- D. Instantly rechargeable battery for electric cars

**96. Bhaskaravarman, the crowned ruler of Kamrupa kingdom, was the contemporary of**

- A. Harshavardhana
- B. Akbar
- C. Ashoka
- D. Samudragupta

**97. With reference to the Constitution of India, prohibitions or limitations or provisions contained in ordinary laws cannot act as prohibitions or limitations on the constitutional powers under Article 142. It could mean which one of the following? (UPSC 2019)**

- A. The decisions taken by the Election Commission of India while discharging its duties cannot be challenged in any court of law.
- B. The Supreme Court of India is not constrained in the exercise of its powers by laws made by the Parliament.
- C. In the event of grave financial crisis in the country, the President of India can declare Financial Emergency without the counsel from the Cabinet.
- D. State Legislatures cannot make laws on certain matters without the concurrence of Union Legislature.

**98. Kushinagar is a significant place in Buddhism since**

- A. It is Gautam Buddha's final resting place
- B. Gautam Buddha spent 24 rainy seasons here
- C. Gautam Buddha gave his first sermon here
- D. Gautam Buddha attained enlightenment here

**99. Which of the following nations share a boundary with the Black Sea?**

- 1. Russia
- 2. Romania
- 3. Greece
- 4. Turkey
- 5. Bulgaria

Options:-

- A. 1 & 2 only
- B. 2, 3 & 5 only
- C. 1, 2, 4 & 5 only
- D. 1 & 3 only

**100. Under the Liberalised Remittance Scheme (LRS), resident individuals are permitted to remit up to which of the following amounts in a financial year?**

- A. \$1,00,000
- B. \$2,50,000
- C. \$5,00,000
- D. \$10,00,000

**101. Consider the following statements with regards to the impact of increased temperatures.**

- 1. Rising temperatures shorten the time in which the plants reach maturity.
- 2. Rising temperatures result into smaller yields.
- 3. The WHO European region is the most affected when it comes to deaths due to heat exposure.

Which of the above statements is/are correct?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**102. Consider the following statements: (UPSC 2019)**

- 1. Agricultural soils release nitrogen oxides into environment.
- 2. Cattle release ammonia into environment.
- 3. Poultry industry releases reactive nitrogen compounds into environment.

Which of the statements given above is/ are correct?

- A. 1 and 3 only
- B. 2 and 3 only
- C. 2 only
- D. 1, 2 and 3

**103. 'Right to Protest' is considered as an implicit part of which of the following fundamental rights?**

- A. Article 14
- B. Article 19
- C. Article 21
- D. Article 32

**104. Consider the following statements with regards to parole and furlough:**

- 1. Unlike parole, furlough is granted periodically irrespective of any reason, and merely to enable the prisoner to retain family and social ties, and to counter the ill-effects of prolonged time spent in prison.
- 2. Parole is not a right, and is given to a prisoner for a specific reason, such as a death in the family or a wedding of a blood relative.
- 3. Prison is a state subject and all states have their own rules for parole, furlough, remission and premature release based on the good conduct of the prisoners.



Which of these statements is/are correct?

- A. 1 & 2 only
- B. 2 only
- C. 3 only
- D. All of the above

**105. Consider the following statements with regards to the Financial Action Task Force (FATF):**

1. The Financial Action Task Force (FATF) is an inter-governmental body established in 1989 during the G20 summit in Paris.
2. The objectives of the FATF include setting standards and promoting effective implementation of legal, regulatory and operational measures for combating money laundering, terrorist financing and other related threats to the integrity of the international financial system.
3. Its Secretariat is located at the Organisation for Economic Cooperation and Development (OECD) headquarters in Paris.

Which of these statements is/are correct?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**106. Consider the following statements with regards to United Nations Development Programme (UNDP):**

1. The UNDP Executive Board is made up of representatives from 36 countries around the world who serve on a rotating basis.
2. It is funded entirely by voluntary contributions from member nations.
3. The nodal agency for all matters related to UNDP in India is the Department of Economic Affairs, Finance Ministry, GOI.
4. The UNDP is governed by an administrator, who is the third-highest ranking UN official after the Secretary-General and Deputy Secretary-General.

Which of these statements is/are correct?

- A. 1 & 2 only
- B. 3 & 4 only
- C. 1, 2 & 4 only
- D. All of the above

**107. Why are dewdrops not formed on a cloudy night? (UPSC-2019)**

- A. Clouds absorb the radiation released from the Earth's surface.
- B. Clouds reflect back the Earth's radiation.
- C. The Earth's surface would have low temperature on cloudy nights.
- D. Clouds deflect the blowing wind to ground level.

**108. Consider the following statements with regards to Amur Falcons:**

1. These species of birds come under the category of Least Concern under the International Union for Conservation of Nature (IUCN) Red List.
2. While migrating, the Amur Falcon covers a distance of 22,000 km, making it one of the longest distances covered by migratory birds.
3. Manipur is known as the Falcon Capital of the world.

Which of these statements are correct?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**109. Which of the following come in the category of 'beach sand minerals'?**

1. Monazite
2. Zircon
3. Radium
4. Garnet

Options:-

- A. 1, 2 & 3 only
- B. 1, 3 & 4 only
- C. 1, 2 & 4 only
- D. 2, 3 & 4 only

**110. Consider the following statements with regards to allocation of cadre to an IAS officer:**

1. While assigning a cadre, the candidate's home state and state of the allocated cadre are consulted by UPSC.
2. The candidate doesn't have the right to be allocated the cadre of his/her choice.
3. If candidates from Scheduled Castes (SCs), Scheduled Tribes (STs), or Other Backward Class (OBC) get selected in the general category without recourse to the benefit of reservation, they can use it for getting cadre or place of appointment of choice.

Which of these statements is/are incorrect?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**111. 'e-MASIHA' app, often seen in the news, is used for**

- A. Budget management of the Ministry of Minority Affairs
- B. Providing health facility for Haj visitors from India
- C. Applying for Haj pilgrimage
- D. Receiving grievance from Hajis and feedback to improve the service

**112. With reference to the British colonial rule in India, consider the following statements: (UPSC-2019)**

- 1. Mahatma Gandhi was instrumental in the abolition of the system of 'indentured labour'.
- 2. In Lord Chelmsford's 'War Conference', Mahatma Gandhi did not support the resolution on recruiting Indians for World War.
- 3. Consequent upon the breaking of salt law by Indian people, the Indian National Congress was declared illegal by the colonial rulers.

Which of the statements given above are correct?

- A. 1 and 2 only
- B. 1 and 3 only
- C. 2 and 3 only
- D. 1, 2 and 3

**113. Which of the following statements are correct?**

- 1. In Assam, Brahmaputra valley is dominated by Assamese speakers and Barak valley is dominated by Bengali speakers.
- 2. The Barak Valley is located in the southern region of Assam.

Which of these statements are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

**114. Which of the following statements are incorrect?**

- 1. Melioidosis, also called Whitmore's disease, is an infectious disease that can infect humans or animals.
- 2. The disease is caused by the bacterium *Burkholderia pseudomallei*.
- 3. It is a soil-dwelling bacterium endemic to temperate regions.
- 4. It is also recognized as a bioterrorism agent.

Options:-

- A. 1 only
- B. 1 and 2 only
- C. 3 only
- D. 3 and 4 only

**115. With reference to COVID-19 and vaccines, how is 'hybrid immunity' acquired:**

- A. Through natural infection and herd immunity
- B. Through natural infection and a single dose of vaccine
- C. Through two doses of vaccine and herd immunity
- D. Through one dose of vaccine, natural immunity and herd immunity

**116. The creation of National Judicial Infrastructure Authority of India (NJIAI) was first proposed by-**

- A. 2nd Administrative Reforms Commission
- B. NITI Aayog
- C. 48th Chief Justice of India N.V.Ramana
- D. 21st Law Commission of India

**117. The Tsugaru Strait connects**

- A. Andaman Sea with South China Sea
- B. South China Sea with Gulf of Thailand
- C. South China Sea with Philippine Sea
- D. Sea of Japan with Pacific Ocean

**118. The Bangabandhu Friendship Exhibition Centre in Bangladesh has been funded by:**

- A. India
- B. EU
- C. China
- D. Japan

**119. Which of the following statements are incorrect?**

1. Melioidosis, also called Whitmore's disease, is an infectious disease that can infect humans or animals.
2. The disease is caused by the bacterium *Burkholderia pseudomallei*.
3. It is a soil-dwelling bacterium endemic to temperate regions.
4. It is also recognized as a bioterrorism agent.

Options:-

- A. 1 only
- B. 1 and 2 only
- C. 3 only
- D. 3 and 4 only

**120. What best describes the term 'Hot Jupiters'?**

- A. Extremely high temperature on Jupiter as it approaches the Sun
- B. Hot and gaseous moons of the planet Jupiter
- C. Jupiter like planets beyond the solar system with similar mass, structure and orbit
- D. A class of gas giant exoplanets similar to Jupiter but have very short orbital periods due to their close proximity to their stars and high surface-atmosphere temperatures

**121. With reference to the history of India, 'ulgulan' or the great tumult is the description of the which of the following?**

- A. The revolt of 1857
- B. The Mappila rebellion of 1921
- C. The Indigo revolt of 1859-1860
- D. Birsa Munda's revolt of 1899-1900

**122. GAVI, often seen in the news, refers to which of the following?**

- A. Global vaccine alliance formed specifically to expedite the rollout of Covid vaccine around the world
- B. Global vaccine alliance formed under OECD guidelines
- C. Global vaccine alliance with a goal of increasing access to immunization in poor nations
- D. Global vaccine alliance working on rolling out world's first anti-malarial vaccine

**123. Consider the following statements with regards to the National Fund to Control Drug Abuse and choose the correct ones:**

1. The fund is overseen by Social Justice and Empowerment Ministry.
2. The fund was created in accordance with a provision of the Narcotic Drugs and Psychotropic Substances Act, 1985, with a nominal corpus of ₹23 crore.
3. The Act states that the fund would be used to combat illicit trafficking of narcotics, rehabilitating addicts, and preventing drug abuse.

Options:

- A. 1 & 2 only
- B. 1 & 3 only
- C. 2 & 3 only
- D. All of the above

**124. Consider the following statements with regards to additional judges in the High Court and choose the incorrect ones:**

1. The Parliament determines the maximum number of additional judges permitted in any High Court in India.
2. The maximum tenure of an additional judge is 2 years.
3. The additional judges in the High Court are appointed by the Governor of that state.

Options:

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**125. Consider the following statements with regards to the GIFT city:**

1. It is located in Gujarat's Gandhinagar.
2. It is a Greenfield project.
3. It would only have commercial areas and no residential facilities.

Which of these statements are correct?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**126. With reference to Asian Infrastructure Investment Bank (AIIB), consider the following statements: (UPSC-2019)**

1. AIIB has more than 80 member nations.
2. India is the largest shareholder in AIIB.
3. AIIB does not have any members from outside Asia.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

**127. Consider the following statements with regards to Dadasaheb Phalke awards and choose the correct ones.**

1. The award is named after Dhundiraj Govind Phalke, regarded as the 'father of Indian cinema'.
2. Dadasaheb Phalke Award was introduced by the government in 1969 and it was awarded for the first time to Devika Rani, "the first lady of Indian cinema".
3. Dadasaheb Phalke directed India's first feature film Raja Harishchandra (1913).

Options:-

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**128. Consider the following statements with regards to the National Commission for Scheduled Castes in India:**

1. It is a constitutional body set up under the provisions of Article 338A of the Indian Constitution.
2. The Commission is also required to discharge similar functions with regards to the Anglo-Indian Community as it does with respect to the SCs.
3. Its functions include monitoring and investigating all issues concerning the safeguards provided for the SCs under the Constitution.

Which of these statements is/are correct?

- A. 1 & 2 only
- B. 1 & 3 only
- C. 2 & 3 only
- D. All of the above

**129. Consider the following statements with regards to production of Rubber:**

1. Kerala is the top producer of rubber amongst all the Indian states.
2. Recently, the world's first Genetically Modified (GM) rubber plant developed by Rubber Research Institute was planted in Assam.
3. Rubber Board, headquartered at Kottayam, Kerala, under the administration of the Ministry of Commerce and Industry, is responsible for the development of the rubber industry in the country by assisting and encouraging research, development, extension and training activities related to rubber.

Which of these is incorrect?

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. None of the above

**130. Which of the given statements is not true with regards to the Piprahwa relics?**

- A. They were gifted to Sri Lanka by the Indian government 141 years ago
- B. The relics include bone fragments, ashes and pieces of jewels of Buddha
- C. The relics are kept at Waskaduwa Viharaya in Sri Lanka
- D. None of the above

**131. Consider the following statements:**

1. According to the Indian Patents Act, a biological process to create a seed can be patented in India.
2. In India, there is no Intellectual Property Appellate Board.
3. Plant varieties are not eligible to be patented in India.

Which of the statements given above is/are correct?

- A. 1 and 3 only
- B. 2 and 3 only
- C. 3 only
- D. 1, 2 and 3

**132. Consider the following statements with regards to National Population Register:**

1. NPR has been termed as the register of usual residents of the country by the Office of the Registrar General and Census Commissioner.

2. A "usual resident", for the NPR, is a person who has lived in an area for at least one year or more, or a person who intends to live in an area for the next one year or more.

3. The Registrar General of Citizen Registration would be responsible for providing the notification regarding the duration of the enumeration in the Official Gazette.

Options:-

- A. 1 & 2 only
- B. 2 & 3 only
- C. 1 & 3 only
- D. All of the above

**133. Consider the following statements with regards to the Gorkhaland Territorial Administration:**

1. The Gorkhaland Territorial Administration (often abbreviated as GTA) is an Autonomous District Council for the Darjeeling and Kalimpong areas of West Bengal.

2. The GTA was formed in 2012 to replace the Darjeeling Gorkha Hill Council.

3. The formation of GTA resulted from a tripartite agreement between the Union government, the State government and Gorkha Janamukti Morcha.

Which of these statements is/are correct?

- A. 1 & 2 only
- B. 1 & 3 only
- C. 2 & 3 only
- D. All of the above

**134. Consider the following statements with regards to languages in India and choose the incorrect one:**

A. "Rajbhasha Bharati" is a quarterly magazine published by the Department of Official Language and is dedicated to encouraging Hindi writing in the fields of technology, information, literature, etc.

B. There are no fixed criteria for any language to be included in the Eighth Schedule of the Indian Constitution.

C. Since 2018, members of parliament can speak in any of the 22 languages in the 8th schedule after giving a 24-hour prior notice.

D. None of the above

**135. Electoral bonds are sold by**

- A. All the Scheduled Commercial Banks in India
- B. All the Scheduled Public Sector Banks in India
- C. All the Scheduled Private Sector Banks in India
- D. Only a few designated branches of the State Bank of India

**136. With reference to forced labour (Vishti) in India during the Gupta period, which one of the following statements is correct? (UPSC-2019)**

A. It was considered a source of income for the State, a sort of tax paid by the people.

B. It was totally absent in the Madhya Pradesh and Kathiawar regions of the Gupta Empire.

C. The forced labourer was entitled to weekly wages.

D. The eldest son of the labourer was sent as the forced labourer.

**137. With reference to Asian Infrastructure Investment Bank (AIIB), which of the following statements is/are correct?**

1. AIIB is a multilateral development bank headquartered in Shanghai.

2. It began its operations in 2009 after the Global Financial Crisis.

3. India is the second-largest shareholder after China.

Options:

- A. 1 only
- B. 2 and 3 only
- C. 3 only
- D. 1, 2 and 3

**138. Consider the following statements:**

1. The Solicitor General of India is allowed to represent private clients.

2. The remuneration of the Solicitor General of India is not fixed by the Constitution.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both
- D. None



**139. Which of the following statements is/are correct?**

1. China is the world's largest aluminium producer.
2. Bauxite is the main source of alumina production.
3. Bauxite has been found in all continents except Antarctica.

Options:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

**140. With respect to National Bank for Financing Infrastructure and Development (NaBFID), which of the following statements is/are correct?**

1. No investigation can be initiated against employees of NaBFID without the prior sanction of the central government in the case of the chairperson or other directors.
2. Appointments Committee of the Cabinet will recommend candidates for the post of the Managing Director and Deputy Managing Directors.

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**141. With reference to 'Agenda 21', sometimes seen in the news, consider the following statements:**

1. It is a global action plan for sustainable development.
2. It originated in the World Summit on Sustainable Development held in Johannesburg in 2002.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

**142. In which of the following cases, burden to prove innocent rests on the accused?**

1. Dowry Death
2. Cases under SC/ST Act
3. Child Sexual Assault Cases
4. Drug cases under NDPS Act

Options:

- A. 1, 2 and 3 only
- B. 2, 3 and 4 only
- C. 1, 3 and 4 only
- D. 1, 2, 3 and 4

**143. CAATSA has been imposed on which of the following countries?**

1. Afghanistan
2. Iran
3. North Korea
4. Russia
5. Syria

Options:

- A. 1, 2 and 3 only
- B. 2, 3 and 4 only
- C. 1, 3, 4 and 5 only
- D. 1, 2, 3, 4 and 5

**144. Which of the following statements is/are correct?**

1. A person to be appointed as a judge of a high court should have been an advocate of a high court for seven years
2. A distinguished Jurist in the opinion of President can be a Judge of the High Court

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**145. The Ministries/Departments of the Government are created by the**

- A. President
- B. Prime Minister
- C. Council of Ministers
- D. Cabinet Secretary

**146. In the context of the history of India, consider the following pairs: (UPSC-2016)**

Term	Description
1. Eripatti:	Land, revenue from which was set apart for the maintenance of the village tank
2. Taniyurs:	Villages donated to a single Brahmin or a group of Brahmins
3. Ghatikas:	Colleges generally attached to the temples

Which of the pairs given above is/are correctly matched?

A. 1 and 2

B. 3 only

C. 2 and 3

D. 1 and 3

**147. Consider the following statements with respect to Habeas Corpus:**

1. It can be issued against both public authorities, as well as private individuals.

2. Locus Standi does not apply.

3. The Principle of application of res judicata is not applicable in Writ of Habeas Corpus even if filed on the same grounds as the first one.

Which of the above statements is/are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. None

**148. With respect to Defamation in India, which of the following statements is/are correct?**

1. Defamation is civil as well as criminal wrong.

2. The civil law of defamation is not codified whereas the criminal law is codified.

3. The right to reputation is an integral part of Article 21 of the Constitution.

Options:

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

**149. Which of the following statements is/are correct?**

1. Index of Eight Core Industries (ICI) is released by the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry.

2. The ICI is released every six months.

Options:

A. 1 only

B. 2 only

C. Both

D. None

**150. With respect to the Governor of RBI, which of the following statements is/are correct?**

1. An economics or finance background is compulsory as prescribed under the Reserve Bank of India Act, 1934.

2. He/she can hold office for a term of three years or until the age of 70 years with no scope for reappointment.

Options:

A. 1 only

B. 2 only

C. Both

D. None

**151. Consider the following statements:**

1. The Sustainable Development Goals were first proposed in 1972 by a global think tank called the 'Club of Rome'.

2. The Sustainable Development Goals have to be achieved by 2030.

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

**152. What was Damin-i-Koh?**

A. A large area of land in the Rajmahal hills

B. An educational Institution

C. Village headman

D. Protection money paid by travellers

**153. With respect to Bridgmanite, which of the following statements is/are correct?**

1. It is the most volumetrically abundant mineral of the Earth's interior.

2. It is present in the lower mantle

Options:

A. 1 only

B. 2 only

- C. Both
- D. None

**154. Which of the following reports are published by International Monetary Fund (IMF)?**

1. Global Financial Stability Report (GFSR)
2. Travel & Tourism Competitiveness Report
3. World Economic Outlook

Options:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

**155. Which of the following statements is/are incorrect?**

1. Arabica is mild coffee and has higher market value compared to Robusta beans.
2. Robusta is susceptible to pests & diseases such as White Stem Borer and requires more shade than Arabica

Options:

- A. 1 only
- B. 2 only
- C. Both
- D. None

**156. With reference to 'Pradhan Mantri Fasal Bima Yojana', consider the following statements (UPSC 2016):**

1. Under this scheme, farmers will have to pay a uniform premium of two percent for any crop they cultivate in any season of the year.
2. This scheme covers post-harvest losses arising out of cyclones and unseasonal rains.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

# ANSWER KEYS

1	A
2	C
3	B
4	B
5	B
6	A
7	B
8	C
9	D
10	D
11	C
12	D
13	A
14	B
15	C
16	D
17	D
18	D
19	D
20	A

21	A
22	C
23	C
24	B
25	B
26	C
27	A
28	A
29	B
30	C
31	D
32	D
33	A
34	D
35	D
36	C
37	D
38	D
39	B
40	A

41	B
42	D
43	A
44	D
45	B
46	B
47	A
48	C
49	D
50	B
51	B
52	B
53	D
54	B
55	C
56	D
57	B
58	B
59	D
60	C

61	C
62	A
63	B
64	A
65	B
66	D
67	A
68	D
69	D
70	D
71	B
72	B
73	D
74	C
75	C
76	D
77	D
78	D
79	A
80	C



81	B
82	C
83	A
84	C
85	C
86	C
87	B
88	B
89	B
90	B
91	C
92	B
93	C
94	B
95	C
96	A
97	B
98	A
99	C
100	B

101	D
102	D
103	B
104	D
105	B
106	D
107	B
108	A
109	C
110	C
111	B
112	B
113	C
114	C
115	B
116	C
117	D
118	C
119	C
120	D

121	D
122	C
123	D
124	C
125	A
126	A
127	D
128	C
129	D
130	D
131	C
132	C
133	D
134	D
135	D
136	A
137	C
138	C
139	D
140	A

141	A
142	D
143	B
144	D
145	A
146	D
147	B
148	D
149	A
150	D
151	B
152	A
153	C
154	C
155	B
156	B

# MAINS PRACTICE QUESTIONS

## GS Paper 1

### **Social issues**

1. Sanitation is not just about building toilets, it is much more. Discuss. (15 Marks, 250 Words)

### **History**

1. What makes Gandhi so relevant and meaningful for our world is that his political legacy and his philosophical significance continue to inspire millions of people around the globe to fight against inequality, injustice and historical wrongs. Comment. (250 words; 15 marks)

## GS Paper 2

### **Polity**

1. Making Political Parties constitutional will ensure in-party democracy by bringing transparency in its functioning. Substantiate. (10 Marks, 150 Words)
2. Despite a basic structure, Indian federalism needs institutional amendment to be democratically federal. Critically evaluate. (250 words; 15 marks)
3. Evaluate the need for the constitutional 'Right to Health for all'. (250 words; 15 marks)
4. 'The task of reorganizing the states in India is still unfinished'. Do you agree? Elucidate with examples. (250 words; 15 marks)
5. Evaluate the role of caste demographics in influencing electoral outcomes, particularly in state elections. (250 words; 15 marks)
6. Critically evaluate the need for a socio-economic caste census. (250 words; 15 marks)
7. Examine the conflict between the two competing rights — freedom to protest and the right to free movement of the public. Apply this debate specifically to the ongoing farmers' protests against farm laws and evaluate. (15 marks, 250 words)
8. Examine the controversy surrounding Mullaperiyar dam in the light of recent directions given by the Supreme Court. (15 marks, 250 words)
9. The Supreme Court recently ruled that the power of the state to snoop into people's 'sacred private space' is not absolute. Critically examine the statement in the light of the Pegasus scandal. (15 marks, 250 words)
10. Should the Narcotic Drugs and Psychotropic Substances (NDPS) Act of 1985 be amended? (15 marks, 250 words)

### **Governance**

1. Transforming urban India calls for community-based moves towards a circular economy. Discuss. (250 words; 15 marks)
2. Examine the need to infuse public health into Indian medical education. (250 words; 15 marks)
3. The low rank on the Global Hunger Index should push India to look again at its policies and interventions. Discuss. (250 words; 15 marks)
4. India marked a major milestone in its fight against the COVID-19 pandemic by completing 100 crore vaccine doses in a record time. In light of this, analyse the factors that helped India achieve this feat. (15 marks, 250 words)
5. The Pradhan Mantri Ayushman Bharat Health Infrastructure Mission aims to build a robust public health infrastructure. Discuss. (15 marks, 250 words)

## **International Relations**

1. In the light of negotiations on the proposed FTA talks between India and Australia, liberalizing investment regimes would result in valuable economic benefits for both countries. Discuss.
2. India and China need to restore normalcy along the border before cooperation on other issues. Examine. (250 words; 15 marks)
3. India needs to reconsider the plethora of regional and global alliances it is in and rationalise them after a reality check. Critically evaluate. (250 words; 15 marks)
4. The formation of the AUKUS security grouping spells opportunities but also possible unique challenges which New Delhi can ill-afford to ignore. Examine. (15 marks, 250 words)
5. India's path to power will be affected by the geopolitical and economic centres of gravity now shifting to Asia. Examine. (250 words; 15 marks)
6. The World Trade Organization is facing an existential crisis. Do you agree? Elucidate. (250 words; 15 marks)
7. In pursuing its Indo-Pacific strategy, India needs to be mindful of the China-U.S. equations in the region. Analyse. (250 words; 15 marks)
8. The U.S. appears to be outlining a softer focus for Quad. Evaluate. (250 words; 15 marks)
9. Recent communal incidents in Bangladesh, targeted against religious minorities, have emerged as a major cause of concern for India. While India voices concern on these attacks, it should not appear religiously partisan. Examine. (250 words; 15 marks)
10. India must retain strong ties with Iran as it seeks a partnership with the U.S-Israel-UAE bloc. Critically evaluate. (250 words; 15 marks)
11. Examine India's interests in Central Asia and its diplomatic outreach towards the region. (15 marks, 250 words)
12. The failure to resolve the fishermen's dispute is hurting India – Sri Lanka relations. Elucidate. (15 marks, 250 words)
13. Russian companies have the potential to be long-term partners with India in aiding its energy transformation. Illustrate. (15 marks, 250 words)

## **Social Justice**

1. Despite Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) bringing a radical and rational systemic change by empowering the poor, it is beset with challenges. Discuss. (15 Marks, 150 Words)

## **GS Paper 3**

### **Economy**

1. Decision to end retrospective taxation will help the Centre project India as an investor-friendly destination. Comment. (10 Marks, 150 Words)
2. With an alarming escalation in global hunger unfolding, reaching the goal of an equitable livelihood is a necessity. Comment. (250 words; 15 marks)
3. Critically evaluate the proposed guidelines on microfinance brought out recently by the RBI. (15 marks, 250 words)
4. Indian agriculture is in need of a data revolution but technological fixes and agribusiness investments alone will not be enough to improve farmers' livelihoods. Critically examine. (250 words; 15 marks)
5. India's tourism and hospitality sector may hold the key towards solving the long pending unemployment problems in the country. Discuss. (250 words; 15 marks)
6. The success of the Gati Shakti National Master Plan is dependent on the extent of cooperation between Centre and States. Discuss. (250 words; 15 marks)
7. Why is India facing a shortage in coal supply and how will it affect the country? Discuss. (10 Marks, 150 Words)

8. HELE (High Efficiency Low Emissions) coal technology provides a pragmatic path that meets energy needs and lowers emissions. Comment. (10 Marks, 150 Words)
9. What are the causes of farmer suicides in India? Highlight the initiatives taken by the government to help prevent farmer suicides and suggest a future course of action. (15 Marks, 150 Words)

### **Environment and Ecology**

1. In forest restoration, the participation of local communities and adequate financing and incentives are essential. Elucidate. (250 words; 15 marks)
2. Overall decrease in the area under snow in Himachal Pradesh will have devastating consequences on the region. Discuss. (10 Marks, 150 Words)
3. Why are natural gas prices soaring? How will it affect the world and India? Examine. (10 Marks, 150 Words)
4. India's geodiversity, or variety of the geological and physical elements of nature, is unique. Preserving this geological heritage is as important as safeguarding biodiversity and cultural heritage. Discuss. (250 words; 15 marks)
5. Without concrete financial commitments, global climate change summits have turned into fancy talk shops. Suggest ways to change this unfortunate reality. (250 words; 15 marks)
6. As heavy monsoons bring in more extreme weather events, States must act to preserve the integrity of our rivers and mountains to mitigate the impact. Examine. (250 words; 15 marks)
7. The recent export of about 500 tonnes of rice from India has triggered an uproar in several European countries on the grounds that it was genetically modified (GM) rice. Examine the implications and why India must assuage importers that its produce is compliant with trade demands on GM foods. (250 words; 15 marks)
8. With regard to climate change negotiations, explain the significance of Article 6 of the Paris Agreement. (250 words; 15 marks)
9. Kerala must rethink the very idea of development to prevent disasters threatening its future. Do you agree? Justify. (10 Marks, 150 Words)
10. Examine the reasons why India is facing bouts of extreme weather? (15 marks, 250 words)
11. Flash floods and back-to-back landslips in Kerala bring into focus, once again, the fragile ecosystem of the Western Ghats. Critically evaluate. (15 marks, 250 words)
12. COP26 must focus sharply on reducing emissions till 2030, rather than on net zero 2050, which is too distant a goal. Critically analyse. (15 marks, 250 words)
13. Examine India's emphasis on climate justice and on exhorting developed countries to transfer the finance and technology necessary to deal with the fallout of global warming during the recent climate change summit. (15 marks, 250 words)

### **Science and Technology**

1. The malaria vaccine must see speedy implementation from the lab to the field. Comment. (250 words; 15 marks)

### **Agriculture**

1. As a nation, it is time to focus on our quality of food, rather than quantity. Suggest measures to achieve this goal. (250 words; 15 marks)



## **Security**

1. There has been an uptick in violence in J&K recently and the targeted killings of civilians have emerged as a major cause for concern. In this context, what future course of action would you suggest to contain the situation? (250 words; 15 marks)
2. The Ministry of Home Affairs recently issued a notification extending the jurisdiction of the Border Security Force. Is this a direct attack on federalism? Critically Examine. (10 Marks, 150 Words)
3. Despite the onerous nature of their duties, the police are a neglected lot. Discuss with relevant examples. (15 marks, 250 words)