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GENERAL STUDIES (TEST CODE : 1524)

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Medium Eng./Hindi	ENGLISH	Registration Number	642031
Center		Date	17/12/20

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
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11	15	
12	15	
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16	15	
17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

- Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
उत्तर पुस्तिका में सुप्रमाण भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विभागीय क्रमांक आदि)।
- There are **TWENTY** questions printed in **ENGLISH & HINDI** इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
- All questions are compulsory.**
सभी प्रश्न अनिवार्य हैं।
- The number of marks carried by a question/part is indicated against it.
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
- Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one.
प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (प्रयुक्तीए) पुस्तिका के मुख पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में दिए गए उत्तर पर कोई अंक नहीं मिलेगा।
- Word limit in questions, if specified, should be adhered to.
प्रश्नों में शब्द सीमा जहाँ निर्दिष्ट है, का अनुसरण किया जाना चाहिए।
- Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
उत्तर पुस्तिका में खाली पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

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EVALUATION INDICATORS

1. Contextual Competence
2. Content Competence
3. Language Competence
4. Introduction Competence
5. Structure - Presentation Competence
6. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

2. Tenancy reforms are much needed to give a boost to the Indian agricultural sector. Comment. In this context, also discuss the significance of the Model Land Leasing Act, 2016.

(150 words) 10

कृषि क्षेत्र को बढ़ावा देने के लिए कृषकों के मुद्दों की अत्यंत आवश्यकता है। (विचार करें)। इस संदर्भ में, मॉडल भूमि पट्टा अधिनियम, 2016 के महत्व की भी विवेचना करें।

Tenancy reforms refer to providing security to tenants against eviction and rent rates exploitation while balancing it with the security of land owner rights.

Needed to boost agricultural sector

Operationalise
cooperative farming

by providing secure
land titles and knowing
records, farmers can
join cooperatives.

Land consolidation

to reduce small
shareholding and achieve
economies of scale.

Credit availability

at present, tenants find it difficult to access
formal banking channels in absence of land records.

Significance of Model Leasing Act, 2016

Protection to tenants

- against unjust eviction - long period of leasing (10-20 yrs) ensured without risk of adverse possession.
- certains for setting rates of leasing - dispute resolution mechanism also provided.

Protection to landowners

- against risk of adverse possession
- against fraudulent sales.

Model Leasing Act will revolutionise the apartment sales if implemented effectively. Creating awareness and increasing apartment extension issues are required for the same.

2. Identify the various challenges that have restricted the entry of Indian MSMEs into the foreign market. Also mention some government initiatives that have been taken to facilitate MSME exports. (150 words) 10

विदेशी बाजारों में भारतीय MSMEs के प्रवेश को बाधित करने वाली विभिन्न चुनौतियों की पहचान कीजिए। साथ ही, MSME के निर्यात को सुगम बनाने के लिए सरकार द्वारा की गई कुछ पहलों का भी उल्लेख कीजिए।

MSME amounts to 30% of India's GDP and 45% of its exports. Despite this, it lags behind in foreign markets as can be seen from lowly 1.7% of India's share in global goods trade.

(Economic Survey 2019-20)

Challenges restricting entry

financial constraint
- low credit availability through formal channels.

technological constraint
- still bound on old methods of production.

Quality certification and branding
is unavailable leading to low remunerative prices.

Government Initiatives- Finance

- NIRVIK - for credit & insurance
- Interest Subvention Scheme
- Trade Facilitation Scheme - Subsidy for capital credit availability

- Technology

- One District, One Product Scheme - build clusters
- sector specific - National Technical Textile Mission, SPURTI scheme etc., electronics clusters

- Quality

- zero defect zero effect
- National IPR Policy - to build awareness
- L2 Pro - Law to protect IPR scheme.

These schemes will improve MSME capability and in turn improve their access to foreign markets.

3. India's march towards inclusive growth and it achieving the Sustainable Development Goals are intricately linked. Discuss. (150 words) 10
- सustainable विकास की दिशा में भारत की प्रगति और संश्लेषणीय विकास लक्ष्यों की प्राप्ति अद्वितीय रूप से जुड़े हुए हैं। चर्चा कीजिए।

Inclusive growth refers to equitable society and distribution of economic benefits within a population. At present India is highly unequal society with top 10% population owning 74% of wealth (Oxfam report)

March towards Inclusive growth

- Building capacity of individuals
 - o SDG-2 - Aspirit hunger - National Nutrition Mission.
 - o SDG-3 - Aspirit ill health - Ayushman Bharat PM Jan Shiksha Yojana.
 - o SDG-4 - Education - National Education Policy 2020 - building inclusive society.
- Reducing inequalities
 - o SDG-5 - Reducing gender inequality - increasing financial inclusion - PM San Dhan Yojana.

where 53% beneficiaries are women.

→ increasing employment - MGNREGA - 1/3rd jobs reserved for women.

○ SDG - 10 - Reducing inequalities.

→ Agricultural growth - AM KISAN

→ Labour intensive manufacturing - sectors like footwear, textiles, toys, food processing.

- Sustainable Development

○ SDG - 12 - Sustainable consumption - National Resource Efficiency Policy.

○ SDG - 13 - Against climate change - National Climate Change Action Plan, 450 GW renewable energy target by 2030.

Hence to achieve inclusive growth, achieving SDGs by 2030 should be the way forward. The recent budget 2020-21 with its theme of Aspirational India, economic development and creating society is based on the same.

4. Highlight the need for evolving an appropriate system of Rules Of Origin in regional trading arrangements. What steps have been taken by India recently in this regard? (150 words) 10

क्षेत्रीय व्यापार व्यवस्थाओं में उत्पत्ति के नियमों की एक उपयुक्त प्रणाली विकसित करने की आवश्यकता पर प्रकाश डालिए। हाल ही में, भारत द्वारा इस संबंध में क्या कदम उठाए गए हैं?

Rule of origin refers to the document specifying the source origin of a particular product while undertaking any cross-border trade.

Need for evolving appropriate system in Regional Trading Arrangements

- To apply MFN clause

o Rule of origin helps segregate between countries that are a part of regional trading arrangement and others.

Eg: India - ASEAN FTA - China routes its products through ASEAN and in absence of rule of origin principles, no duties are levied.

- To apply anti-dumping & counter-vailing duties only least developed countries are exempted

Steps by India

- walking out of RCEP - in absence of strict rules of origin guidelines.
- Mandatory requirement of rules of origin certificates - based on Harmonisation system standards.
- Local content requirement specified for e-commerce websites too.

While sufficient rules of origin parameters can mitigate cost of product, the need of hour is to simplify and achieve a comprehensive structure for rules of origin.

5. MSP regime is a creation of an era of scarcity in the 1960s. Discuss its relevance in the current era of surplus agricultural production.

(150 words) 10

MSP व्यवस्था 1960 के दशक के अभावग्रस्तता के युग का एक आविष्कार है। अधिशेष कृषि उत्पादन के वर्तमान समय में इसकी प्रासंगिकता की विवेचना कीजिए।

In 1960s, India faced acute food shortage leading in import of subsidised P480 foodgrains from USA. In light of come MSP regime was implemented to encourage food production and increase government procurement for maintaining efficient public distribution system.

MSP relevance in current era

- Food surplus nation

o FY has more than twice the buffer norms stock.

o Efficient market where food products are traded - APMC established

- private mandis

- e-NAM

- Merits of MSP regime
 - o disrupt production patterns - favours crops even when their demand is decreasing
 - o increases cost of procurement - Still though MSP is bought at ₹ 37 / kg while some is available in market at ₹ 27 / kg.
 - o increases wastage - India loses ₹ 12650 crores because of food wastage.

Due to limited capacity of government to procure, most of the produce already goes to market. MSP distorts market price mechanism as MSP is politically motivated. Thus, need of hour is to promote markets to increase farmers' income.

6. Examine the link between the recent locust attack and climate change. (150 words) 10

हामें ही में हुए टिड्डियों के हमले और जलवायु परिवर्तन के मध्य संबंध का परीक्षण कीजिए।

According to FAO, the 2020 locust attack was worse in last decade and it impacted countries from Spain to South East Asia. This was exacerbated due to peculiar climate conditions that are a result of climate change.

Locusts and climate change

- Breeding increase
 - o Due to increase Atlantic sea warming, cyclonic storms are more prevalent. This increased rainfall in deserts of Oman and East Africa region.
 - Wet deserts soil are the favourable breeding ground for locusts.
 - o more locust population $\Rightarrow$ result of global warming.

- Widespread attack

- o locusts could travel large distances on the wave of westerlies that are strengthening due to global warming.

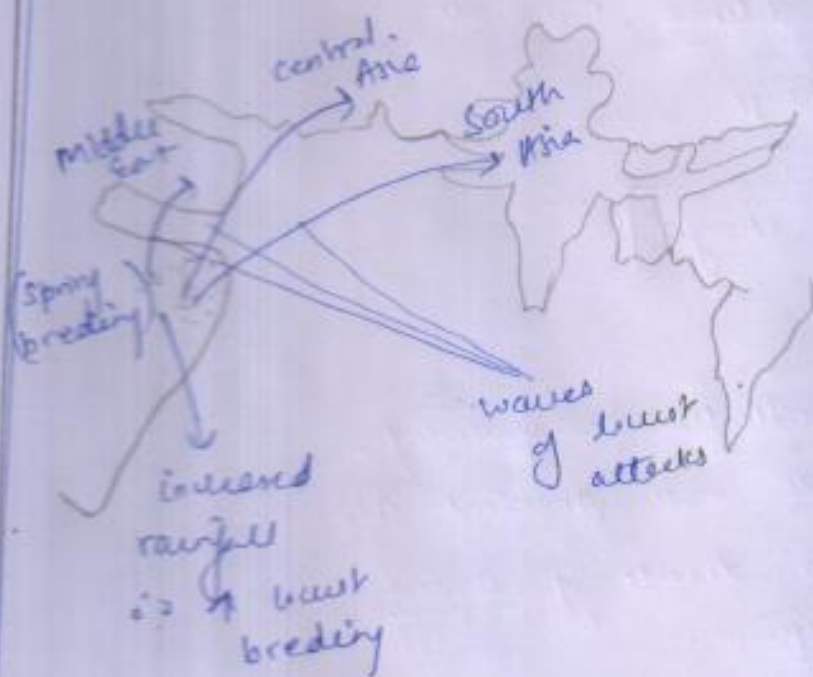


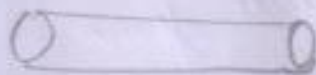
Fig: locust attacks

Inter country coordination by exchange of birds at breeding site and regular monitoring can prevent the worst effect of future locust attacks.

7. Highlighting the properties of Carbon Nanotubes, discuss its applications. (150 words) 10

कार्बन नैनोट्यूब्स के गुणधर्मों पर प्रकाश डालते हुए, इसके अनुप्रयोगों की विवेचना कीजिए।

Carbon nanotubes (CNT) are 1D
(1 Dimension) nanomaterials that are
made up of carbon nanoparticles in the
cylindrical shape.



(Carbon nanotube shape)

Properties of CNTs

- high conductivity
- high strength
- are elastic
- impermeable

Applications

- As Medicine carriers
- As Nanosensors for detection of
viral/bacterial infections.

- o as vascular stents
- o In tires [to built injection resistant products.
built strong products -
eg: military helicopter gear)
- o In packaging - to protect products from radiation.
- o electronic chips

CNTs can be utilized in various other fields like environment, automobiles, space to develop effective and varied products at nanoscale.

8. India's domestic patent regime privileges public health over pharmaceutical industry's interests. Comment. (150 words) 10

भारत की घरेलू पेटेंट व्यवस्था औषध उद्योग के हितों पर सार्वजनिक स्वास्थ्य को विशेषाधिकार प्रदान करती है। टिप्पणी कीजिए।

The Patents Act 1970 regulates the grant of patents in India. It is based on the principles of novelty, non-obviousness and industrial use.

Privileges Public Health over pharma industry

- Section 3(d) - against evergreening of patents. Need to prove major efficiency change or new impact.

is discourage innovation since not everything major efficiencies can be achieved.

- Compulsory licensing - S. 82, 94 - where the patent holder's rights are bypassed for public interest. If product is not available at cheap price or is not worked in India, compulsory license can be awarded.

Does not privilege but balanced regime

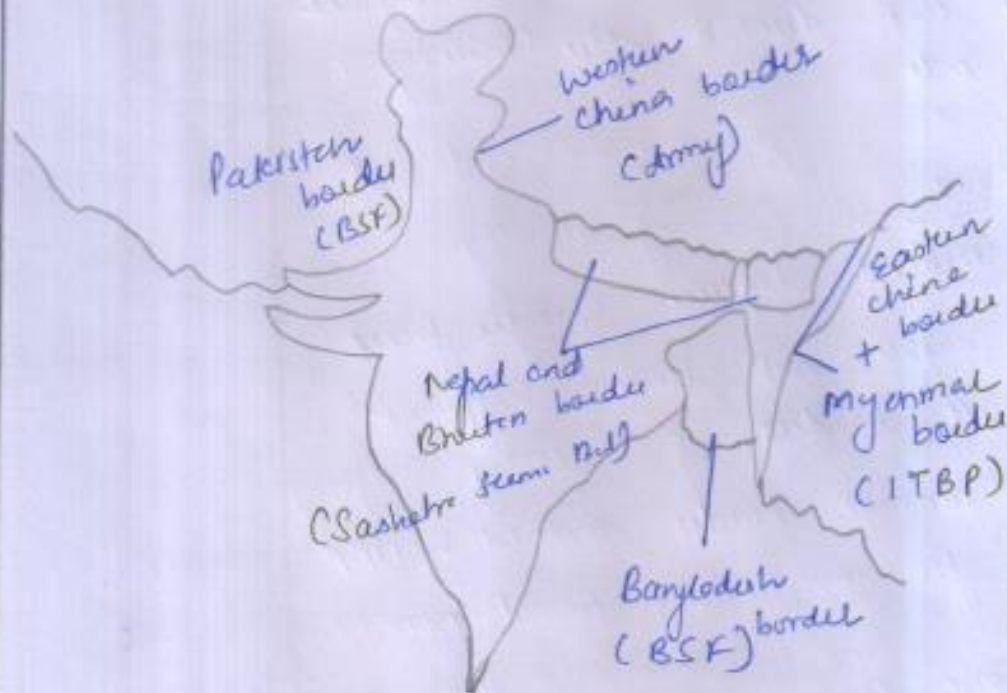
- criteria of novelty applied to efficiencies.
- compulsory license can be awarded only after 3 years except in emergency situations.
- As per compulsory license awarded only once in NATCO v. Bayer case.

Indian Patent regime protects the needs of pharma industry too by providing access to generic medicine production. In absence of same there will be wide inequalities in healthcare leaving large populations impoverished.

9. Bring out the arguments surrounding the idea of employing the principle of 'one border - one force' on Indian borders. (150 words) 10

भारतीय सीमाओं पर 'एक सीमा-एक बल' के सिद्धांत का उपयोग करने के विचार के चतुर्दिक आस तर्कों को स्पष्ट कीजिए।

Indian borders are protected by numerous forces as depending upon exigencies of time and requirement.



One border - one force

It streamlines border protection by handing over the responsibility to a single force against multiple forces present at this time.

- Advantages

- o Brings into full coordination military
- o Increases border efficiency - as present borders are divided among multiple forces.
- o Better monitoring

Eg: Army's appeal to monitor Pat border in place of BSF due to better training and equipments.

- Disadvantages

- o Specific tensions require specific forces.
one force might not have sufficient force on all borders.

Eg: India Myanmar border manned by ITBP is suited for mountainous forested region.

One Border - one force coupled with Integrated Border Commands is a better strategy to increase our border security. Other armed forces could be used to maintain border regions.

10. Assess the need to create a new cadre of Indian Frontier Administrative Service to undertake the vital tasks at Indian frontiers. (150 words) 10
- भारतीय सीमाओं पर महत्वपूर्ण कार्यों को संपादित करने के लिए भारतीय सीमांत प्रशासनिक सेवा का एक नया कर्मचारी बनाने की आवश्यकता का मूल्यांकन कीजिए।

Indian frontiers face various challenges in form of cross border infiltration, rising public unrest and skewed development.

In light of same, Indian frontier administration scheme is proposed.

Need for new cadre

- Specialised training

- o more sensitivity towards cross-border familiarities
- o administration based on not just local needs but national security point of view.

- Better Management

- o since there would be no shuffling to other posts. that are not based on frontier management.
- o specific terrain and local needs are catered to.

No such need

- Administration includes economic, social, political, security needs to be considered. Frontier areas are administered the same way except extra focus on security needs and environmental considerations.
- special code may increase feeling of dis-jointness from rest of country.

Indian Frontier Administration some code is not viable in light of increasing insurgency in frontier areas. It's better that the posted officers are given extra training before posting to better meet the needs of frontier areas.

11. The main objective of Union Budget 2020-21 is to provide "Ease of Living" to all citizens. Analyse the framework proposed in the Budget 2020-21 to achieve this objective.

(250 words) 15

केंद्रीय बजट 2020-21 का मुख्य उद्देश्य सभी नागरिकों को "ईज ऑफ लिविंग" (जीवन सुगमता) प्रदान करना है। इस उद्देश्य को प्राप्त करने के लिए बजट 2020-21 में प्रस्तावित ढांचे का विवेचन कीजिए।

The Union Budget 2020-21 aspires to make India a \$5 trillion economy by 2024-25. In doing so, it focuses on Ease of Doing Business and Ease of Living to all citizens through -



1) Aspirational India

- Agriculture and Rural Development
- o provides ₹ 1 trillion budget for infrastructure development
 - builds ease of agriculture.

- Water, Health and Sanitation

- ₹ 65,000 crore budgeted for PMJAY
(care of healthcare)
- impetus to PM San Aushadhi Yojana
- PM Jal Surveksha Mission - piped water to all households by 2024.
- Shree Aharat Mission - Phase II

- Education and Skill Development

- ₹ 99,300 crore for education and ₹ 3000 crore for skill development
(new human resource development)
- Top 100 universities to be allowed to provide online courses.
(care of education)

2) Economic Development

- Industrial development - ease business across

- Infrastructure

o ₹ 102 crore National Infrastructure Pipeline

- focuses on care of travel - roads, railways.

- focuses on care of energy - electricity, coal, natural gas.

3) Caring India

- Gender Equality

o 4.6% budget allotted for women schemes

- Old and disabled

o Pension schemes plus affordable healthcare.

- Vulnerable communities - SC, ST, OBC

o Increased development budget.

Spent from above by proposing alternative taxation structures that is heavily simplified and focus on affordable housing. the budget ensures development of care of living in India.

12. Several challenges are needed to be addressed to realise the full benefits of the recent agricultural marketing reforms. Discuss. (250 words) 15
- हालिया कृषि विपणन सुधारों के पूर्ण लाभों को साकार करने के लिए अनेक चुनौतियों का सामना करने की आवश्यकता है। बर्खा कीजिए।

In order to double the farmers' income by 2022, the government has initiated liberalisation reforms in agricultural marketing

- Farmers Produce Trade & Facilitation Act, 2020
- Farmers (Empowerment & Leadership) Agreement on Price Assurance Act 2020
- Reforms in Essential Commodities Act, 2010

Challenges to realise full benefits

1) Produce Trade and Marketing

- In absence of alternative marketing structure to replace agricultural marketing Produce Committees (APMCs) the reforms won't see much progress.
- Eg: Bihar

- Issues related to grading, sorting, weighing that will crop up - some are liberal in comparison to private marketplaces
- Quality assurance of farmers' produce

- Athatis also act a source of finance / credit to farmers. formal banking / non-banking channels have to increase credit reach.

2) Contract Farming

- Heavily favoured in side of corporates. small farmers have no bargaining power.
- Monospony like i.e. one buyer and multiple sellers.
- Monoculture like result is environmental degradation
- Dispute resolution mechanism - presently in hand of executive - against farmers' interest - prone to corruption

3) Essential Commodities Act

- difference between saving and duty -
Recent bonds on main exports send
wrong signals to investors.

∴ the exception clause regarding 50%
price increase in case of perishables
and 100% in case of non-perishables
proves on hindrance.

These specific issues in addition to
farmers' concerns regarding MSPs and
public procurement coupled with state
government's reluctance to pay APMC
mandi tax revenue can prove a
challenge.

Government should build consensus to
overcome these challenges.

13. Multimodal transport requires multiple integrations across different modes of transportation. Substantiate. What are the challenges and opportunities associated with multimodal transportation for India? (250 words) 15

बहुविध परिवहन (मल्टीमोडल ट्रांसपोर्ट) के लिए परिवहन के विभिन्न साधनों के मध्य विविध रूप से एकीकरण की आवश्यकता है। यदि कीजिए। भारत के लिए बहुविध परिवहन से जुड़ी चुनौतियाँ और अवसर क्या हैं?

Multi modal transport refers to integrated transport mode involving roads, railways, waterways and airways. It requires measures to enhance last-mile connectivity across different sectors. Eg:

- Golden Quadrilateral - Roads that carry 40% of India's freight

↓
Dedicated freight corridors - railways that will carry them to ports

↓
Inland waterways - eg. Kolkata
Bachmangpora to Bangladesh.

In order to achieve efficiency in passenger and freight movement, it must be developed.

Challenges

- Poor Infrastructure (poor, quality)
 - o Golden Quadrilateral is still only 92% completed despite target of completion by 2008.
- Poor Integration
 - o Due to varying standards between Western Dedicated Freight Corridor (WDFC) and Eastern Dedicated Freight Corridor (EDFC), inter-movement is difficult.
 Eg: WDFC will carry double stacked rails while EDFC will carry single stacked.
- Challenge of Inter-linking of rivers
 - o Issues related to consensus building between states on trans-boundary rivers
 Eg - Cauvery water dispute.
 - o Environmental issues regarding fisheries movement.

- Airways

- UDAN scheme despite allotting multiple second route has seen slackening implementation on ground.
- Eg: only 40% routes have begin functioning.

Opportunities

- Integrating manufacturing regions

- Increase efficiency - At present industries in Gujarat import coal from Orissa then transport from Thackerand.
- Increase exports - land waterways and shipping to Bangladesh, Bhutan, Myanmar.

- Integrating South Asia region and India's North East.

- Multimodal Kaladan Project will integrate India - Myanmar and North East.

In order to overcome the challenges and grab the opportunities the government is spearheading Grandtrunk and Sagarmala projects. Also, two multimodal terminals at Vadavasi, UP and Chitragani, Madhya Pradesh have already been inaugurated. Efficient and speedy implementation will build a sustainable transport system in India.

14. Though COVID-19 pandemic exposes the vulnerability of Informal sector and associated labor force in India, it also presents an opportunity to rebalance formal-informal economy dynamics in the country. Discuss.

(250 words) 15

हालांकि, कोविड-19 महामारी भारत में अनीपचारिक क्षेत्र और संबद्ध थम बल की सुभेद्यता को उजागर करती है, लेकिन साथ ही यह देश में औपचारिक-अनीपचारिक अर्थव्यवस्था की गतिशीलता को संतुलित करने का एक अवसर भी प्रस्तुत करती है। चर्चा कीजिए।

Approximately 92% of India's workforce is employed in informal sector. This sector contributes 50% to India's GDP hence is of utmost importance. This was the hardest hit sector in wake of COVID-19 pandemic.

Vulnerability of informal sector exposed

- Mostly are daily wage earners
 - o Hence meagre savings for emergencies.
 - o No job security or security benefits like EPF and ESI.
 - o heavily dependent of PDS and Mid-Day Meal schemes to fulfill their feeding needs.

- Right of migrants
 - o No database to build policies and monitor their impact.
 - o Issues with Ration card portability and other benefits portability.
- Gender imbalance
 - o overrepresentation of women in sectors like domestic workers, healthcare, which are the hardest hit.

Opportunity to rebalance

- Building migrant database
 - o Recent labour codes incorporate provisions for registration, transport allowance and availability of benefits from construction cess fund.
 - o Inter-state and Intra-state ration card portability to ensure food security.

- Security - benefits

- o Inclusion of gig workers, platform workers in social security fund beneficiaries.
- o Fixed term employment benefits - will contractualise informal workers

Apart from above by providing affordable housing, healthcare and education the government can minimise the gap between formal and informal workers.

15. Highlight the drivers and challenges facing India's ambition to become a gas-based economy. Mention the steps that have been taken by the government recently in this regard. (250 words) 15

सम आधुनिक अर्थव्यवस्था बनने की भारत की महत्वाकांक्षा के चालकों और सामना की जाने वाली चुनौतियों को रेखांकित कीजिए। इस संबंध में हाल ही में सरकार द्वारा उठाए गए कदमों का उल्लेख कीजिए।

The energy sector in India is heavily skewed towards coal with natural gas only accounting for 6.5% of India's energy needs. In light of this, government has targeted to increase this to 15% by 2030 to move towards gas-based economy.

Drivers

- Clean source of energy
 - o Natural gas consumption release far less GHGs as compared to coal and petroleum.
- Efficient utilisation
 - o The plant load factor and energy efficiency is highest in natural gas.
 - o Requirement of fertiliser industry.

ChallengesAvailability

- o very less domestic resources - offshore reserves in Cambay Basin, etc. basin.

o major imports
(approx 70%)

Pricing

- o government administered domestic gas pricing.
- o differential pricing regarding imported gas.

Marketing

- o no marketing freedom leading to less investments.

Government steps- Availability

- o Joint venture in Oman to import natural gas.

- o Hydrocarbon exploration and licensing policy (HELP) - revenue sharing model, exploration cum marketing license etc.

- Pricing

- o Indian Gas Exchange (IGX) established - Delhi, Mumbai in Gujarat and Kakinada in Andhra gas prices will be traded.
- o Gas pooling policy - to reduce disparities.

- Marketing

- o Gas marketing systems - where one price for within 300 km transportation and one price for outside 300 km.

These systems will increase investment in gas exploration and transportation. Further measures by removing administered price mechanism for domestic gas and deregulating marketing sector are the need of hour to build India into gas band economy.

16. Climate Change and the associated events endanger the marine and coastal ecosystems while increasing the vulnerability of coastal population. Examine. (250 words) 15

जलवायु परिवर्तन और संबद्ध घटनाएँ तटीय जनसंख्या की सुशेक्षता को बढ़ाते हुए, समुद्री एवं तटीय पारिस्थितिक तंत्रों को खतरे में डालती हैं। परीक्षण कीजिए।

Climate change refers to the change in indicators like temperature, precipitation, pressure conditions resulting in dysfunctional climate related events like

- melting of glaciers - increasing sea level
- global warming - increasing ocean temperature and ocean acidification
- increasing frequency of cyclones and storms.

Endanger marine and coastal ecosystems

- loss of marine organisms
 - o According to IPCC report, global warming has caused 70% of freshwater population and 40% of marine organism loss
 - o According to IPCC 1.5°C report, by end of century we will lose 70-99%.

g corals due to temperature rise
g more than 1.5°C .

- Eutrophication and anoxic zones

Due to increasing pH the seawater
will have decreased oxygen levels.

Last century already saw 2-4% reduction
g oxygen (WHO report)

Increasing vulnerability of coastal population

- Food

- o Ingress of seawater - coastal salinisation.
decreasing agriculture productivity.
- o loss of fisheries as a resource.

- Shelter

- o Increasing cyclonic storms causing
damage to coastal housing.

Eg: cyclone Amphan made 1.5 lakh
people homeless

- Livelihood

- o Dependent on coastal marine resources for livelihood - climate change will reduce the catch and increase risks.

- Loss of life

- o Due to increasing vector borne diseases
- o Loss of life due to cyclones, tsunamis, storm surges. Indonesia's capital Jakarta is sinking 25 cm every year.

Thus, climate change will harm both marine ecosystem and coastal population. Reducing temperature rise below 1.5°C and increasing climate change resilience are the way forward to protect both ecosystems and populations.

17. Using examples, highlight how natural ecosystems perform different hazard mitigation functions. (250 words) 15

उदाहरणों का उपयोग करते हुए, रेखांकित कीजिए कि प्राकृतिक पारिस्थितिक तंत्र किस प्रकार अलग-अलग संकट के क्षमता का कार्य करते हैं।

Natural ecosystems like wetlands, forests, mangroves, coasts have played an important role to mitigate and prevent disaster vulnerability.

Examples

1) Floods

- wetlands act as natural reservoirs to protect the ecosystem from impact of large water movement.
- forests along the coast of rivers prevent their deglac and also act as acquirous storing excess water.

2) cyclones / Tsunamis

- Mangroves act as natural barriers

against the impact of cyclones and
Bumoris.

Now, post cyclone Amphan, West
Bengal is planning to plant 15 crore
mangroves along the coast.

- o coral reefs are also the first to
be impacted by Bumoris and
cyclones thus bear the maximum
impact and reducing the impact on
coastal population.

3) Forest Fires

- o wetlands maintain soil moisture
thus preventing large fires.
- o they also mitigate against spread
of fires to other areas.

4) Droughts

- wetlands act as water source plus food source - hence mitigating against worst impact of droughts.

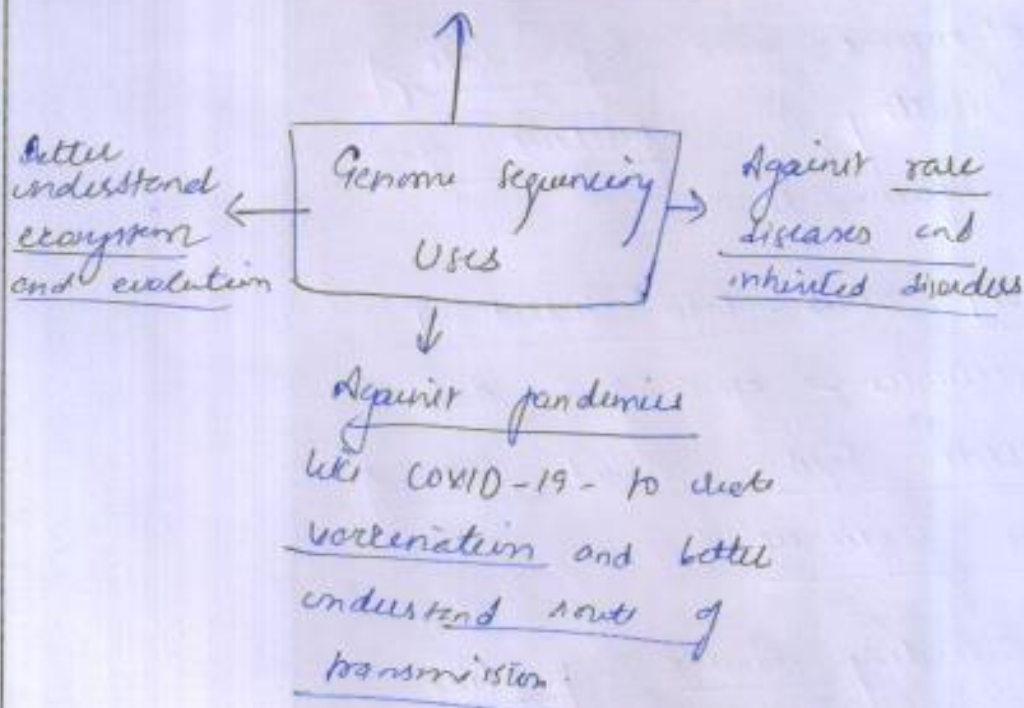
These natural ecosystems help safeguard us from the worst impacts of various hazards. Considering the same, increased focus on safeguarding the natural ecosystem by afforestation, coral replantation and wetland management is required.

18. Explain what genome sequencing is and state the challenges in scaling up genome sequencing projects. Also, throw some light on the recently launched IndiGen Project. (250 words) 15

ज्यादा कीजिए कि जीनोम अनुक्रमण क्या है और जीनोम अनुक्रमण परियोजनाओं को बढ़ावा देने में निम्नलिखित चुनौतियों का वर्णन कीजिए। साथ ही, हाल ही में आरंभ की गई इंडिजेन (IndiGen) परियोजना पर कुछ प्रकाश डालिए।

Genome sequencing refers to the creation of entire database of all genes within an organism. It consolidates information about 30,000 genes and more than 3 lakh DNA pairs when done on humans.

Precision Medicine



Challenges

- Scientific

- o considering the vast amount of data, the storage capabilities have to be enlarged.
- o cost of genome sequencing of all organisms is very high. This collaborative approach is adopted to sequence all eukaryotic organisms genome in Earth Genome project.
- o certain organisms have high rate of mutation resulting in repetitive genome sequencing requirements.

Eg: COVID-19 virus - India shared 9 genome sequences - open form that other countries together should 100% of such genome sequences.

- Ethical - regarding misuse - profiling

India Gen Project

It is a project launched by Department of Biotechnology and CSIR to sequence genomes of 10,000 Indians over the period of time.

- It will be done in a phased manner by targeting 1000 individuals at a time.
- The genome sequencing will help understand uniqueness of indigenous communities.
Eg: Vysya community in Andhra Pradesh has unique sensitivity to anaesthetics.

The genome sequencing technique is a helping to better understand the world.
Open access and sharing will help develop many more scientific breakthroughs.

19. India needs to avert radicalisation and societal dissention, as internal faultlines are a breeding ground for cyber and transnational terrorism. Discuss. (250 words) 15

भारत को कट्टरपंथीकरण और सामाजिक मतभेदों को रोकने की आवश्यकता है, क्योंकि आंतरिक दरंगे माहुर एवं पार-राष्ट्रीय आतंकवाद का जनन स्थल होती है। चर्चा कीजिए।

According to Internet Security Report, India is the most vulnerable country to cyber attacks / terrorism and ranks a lowly 26th on its security of cyberspace infrastructure parameters.

These vulnerabilities are a serious cause of concern in light of internal faultlines of India.

Radicalisation

- Increasing religious, caste based radicalisation due to widening inequalities on socio-economic levels are further heightened due to internet connectivity.
- If these vulnerabilities are exploited by groups like ISIS which use cyberspace

to recruit and train terrorists.

- o Ease of availability of radicalised material also encourages lone wolf attacks.
Eg: Britain, France attacks.

Societal Dissentiation

- It causes feeling of separation among individuals / communities.
Eg: mob lynching, increasing activities against vulnerable communities.
- cyberspace exploits this to fuel hate speech.

Arresting radicalisation & societal dissentiation

- creating safe space for discussion / dissent.
- enforcement of laws - Section 153A, 153B, 295A of IPC that punishes individuals instigating animosity between religious groups should be strictly enforced.

- inclusive development
- o positive discrimination in favour of SCs, STs, minorities.
- o universal basic amenities
- o increasing education & employment.

Protection against cyber & transnational terrorism

- Building safe cyberspace

Eg: childtech call of action

- Signing convention to suppress terrorism

- strengthening cyber security

Only when internally societies are strong,
can they be protected against divisive
forces of terrorism.

20. Given the emerging security challenges, discuss why the establishment of Integrated Theatre Commands is being seen as an important defence reform. (250 words) 15

उभरती हुई सुरक्षा चुनौतियों को देखते हुए, चर्चा की जा रही है कि क्यों एकीकृत विपटन कमान की स्थापना को महत्वपूर्ण रक्षा सुधार के रूप में देखा जा रहा है।

Integrated theatre commands are battalion sized swift and agile forces that are built for specific terrain, task and threats parameters. Currently India has only one Integrated theatre command at Andaman and Nicobar Islands.

Emerging security challenges

- land based

↓
Pakistan

- border infiltration
- cross-border terrorism
- smuggling

↓
China

- border unrest - recently 20 soldiers died at Selwen valley
- Arunachal Pradesh claimed at border of Tibet by China.

↓
Insurgent

groups sheltered in Myanmar,
Bangladesh, Bhutan, Nepal.

- Sea Based

- | | |
|--|--|
| <p>↓</p> <p><u>Seafeguarding free</u>
<u>and open IOR</u></p> <ul style="list-style-type: none"> o <u>China's increased</u>
<u>patrolling</u> and <u>research</u>
<u>vessels</u> in <u>Indian Ocean</u> o <u>It's 9 dash line claim</u>
in <u>South China Sea</u>. o <u>String of pearl strategy</u>
of <u>China</u>. | <p>↓</p> <p><u>Territorialism</u></p> <ul style="list-style-type: none"> o <u>26/11 Mumbai</u>
<u>infiltrated</u> using <u>sea</u>
<u>land transport</u>. o <u>Sri Lankan dispute</u>
with <u>Pakistan</u> |
|--|--|

Integrated Theatre Commands as Defence Reform

- Modernisation of warfare
 - o China has already restructured its military
in theatre commands.
 - o Integrated usage of army, airforce, navy
while facilitating only theatre.
 - o Recommendation of Kargil committee

- Building defensive offensive strategy

- o Due to their small size they are agile and can quickly take offensive actions. This is in contrast to post-Pakistan 1998 that saw time wastage in mobilisation.

- Builds inter-service coordination

- o Continued friction within defence forces is bad for the morale of country. The theatre command help reducing friction by streamlining coordination.

Integrated theatre commands are the need of hour especially in light of increased probability of two-front war with china and Pakistan. They will build India's strength and safeguard both land and maritime boundaries.