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GENERAL STUDIES (TEST CODE : 1524)

Name of Candidate	NISHA	Registration Number	962917
Medium Eng./Hindi	ENGLISH	Date	30-12-2020
Center	ONLINE		

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
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17	15	
18	15	
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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 सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी 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 (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
- Word limit in questions, if specified, should be adhered to.
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट 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 छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

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Delhi- 110009

EVALUATION INDICATORS

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

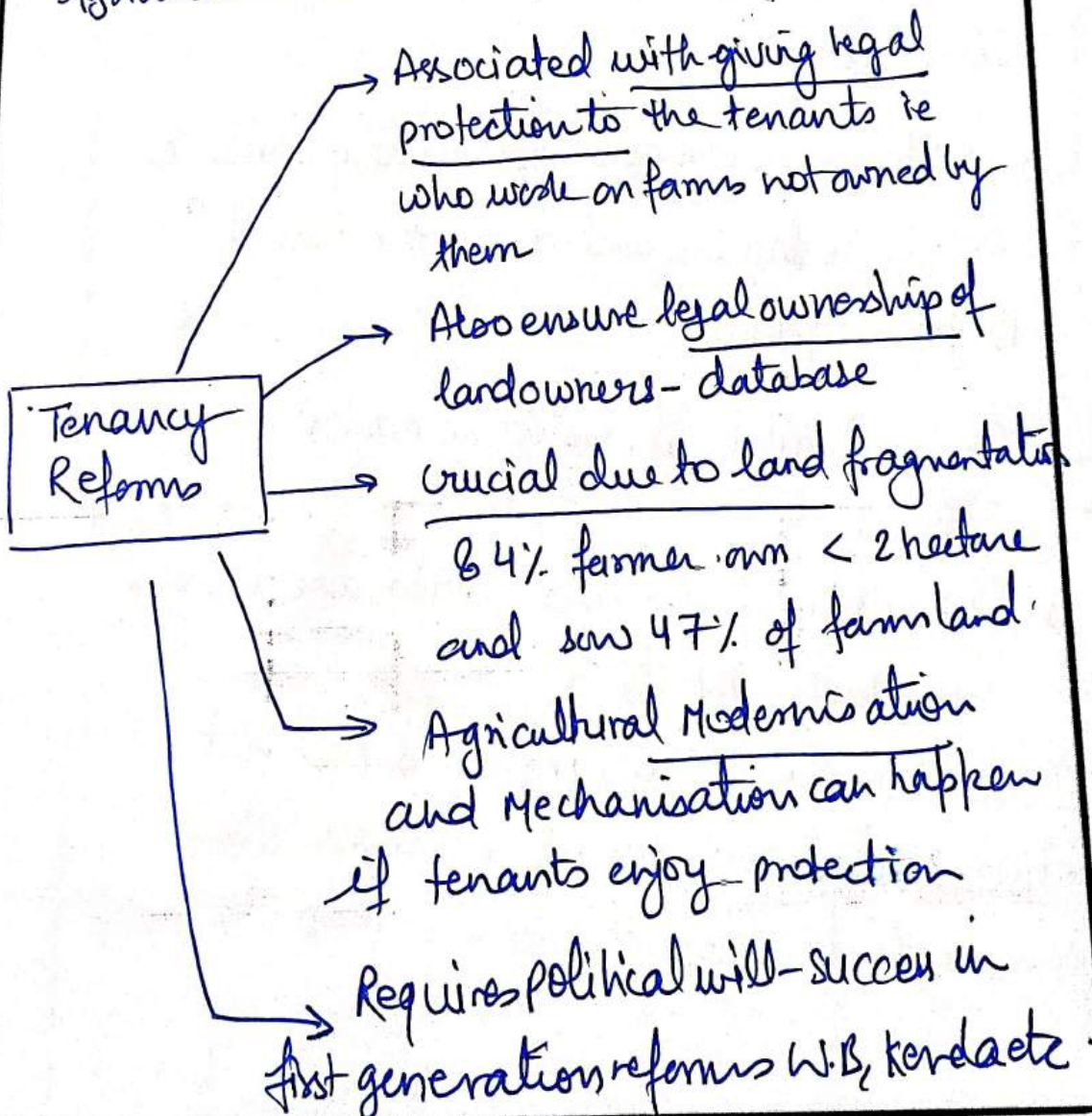
Overall Macro Comments / feedback / suggestions on Answer Booklet:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

1. 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

भारतीय कृषि क्षेत्र को बढ़ावा देने के लिए काश्तकारी सुधारों की अत्यंत आवश्यकता है। टिप्पणी कीजिए। इस संदर्भ में, मॉडल भूमि पट्टा अधिनियम, 2016 के महत्व की भी विवेचना कीजिए।

The father of Green Revolution in India MS-Swaminathan has rightly said that if Agriculture goes wrong in India nothing else have a chance to go right in this country, making reforms in Agriculture sector an imperative.



- Also distress the farming sector by incentivising farmers to opt for non-farm activities.

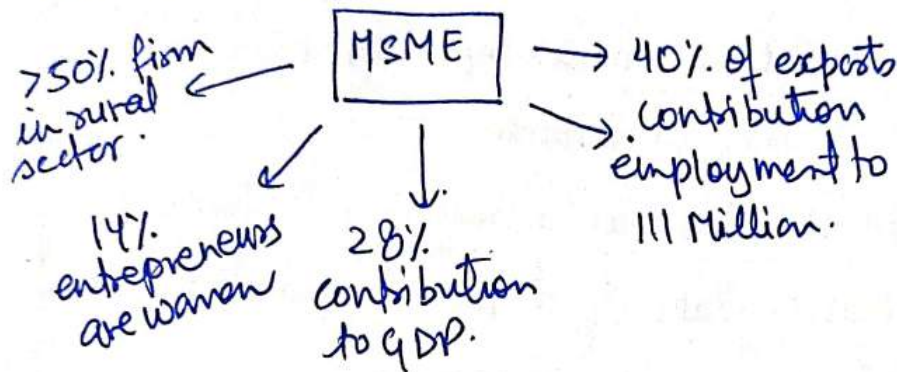
Model Land Leasing Act, 2016

- ↳ initiative of NITI Aayog; Land-state subject
- ↳ Land use policy requires change due to increasing pressures from industrialisation & urbanisation.
- ↳ Provides for conclusive land ownership rights to incentivise farmers and remove the fear of illegal occupation
- ↳ Credit Availability would be easier to tenants.
- ↳ Productivity of the land would also increase with better inputs

Thus Land Leasing Act is step in right direction, central govt should incentivise state governments to adopt 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।

MSMEs are central to India's economic and social development paradigm



Challenges that restricted entry of MSME into foreign market:

- Lack of liquidity and credit availability.
- Infrastructure and high logistics cost (14% of GDP).
- lack of required skill set
- govt regulation of adherence to quality standards
- quality for global standards lacking -
sanitary & phytosanitary norms specially in food processing sector

- Strict labour laws restricting the growth of Micro & Small enterprises into Medium enterprises. restricting economies of scale which could cut costs

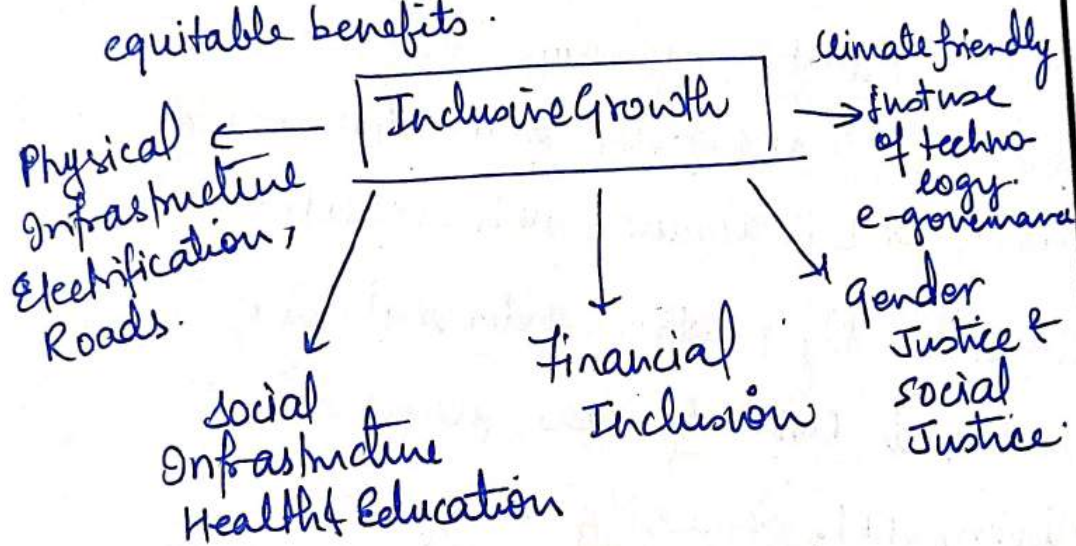
Initiatives by the government

- TReDS platform to ease liquidity through e-voice from NBFE sector.
- Credit linked guarantee schemes - to facilitate loan availability to the sector - under Ama Nibhar Bharat Package.
- Production linked incentive schemes - in sectors like electronics, pharma etc.
- Mega food Parks, PM-KISAN-SAMPADA, TOPS → TOTAL scheme to incentivise MSME to enhance food exports.
- MSME Sambandh, MSME Samadhan - grievance redressal
- SFURTI, ASPIRE - for training & upgradation
- Disallowing tenders below ₹200Cr -

MSME requires handholding support of the government to realise its full potential

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

India's march towards 'Sabka Sath, Sabka Vikas Sabka Vishwas' i.e. inclusive growth which implies that all the segments of Indian economy not only participates but also receives equitable benefits.



Inclusive Growth $\Rightarrow$ SDG :-

→ The goal of India to eradicate poverty & hunger - POSHAN Abhiyan, NFSA, PMGKY are in sync with SDG 1 & 2.

→ Ensuring Health for All - Ayushman Bharat

- Education for all, girl child Education, focusing on learning outcomes - New Education policy -
SDG 4 - quality Education for all.
- Equitable growth, sustained industrial growth with social security safety net = Labour codes,
Atmanirbhar Bharat.
- Climate Resilient Infrastructure, Disaster Risk Reduction = Goal 9 of SDG - India's initiative of
NDMP, CDRI in alliance with Sendai Framework
- Climate friendly growth = India is ahead of
meeting its INDC by 2030, Green India
Mission, SBM, Renewable Energy.
- Financial Inclusion - PMJDY to empower people.
- Infrastructure building - National Infra. Pipeline

Thus the inclusive growth is the practical manifestation of SDG and India should vigorously implement these policies to be role model for other countries by achieving SDGs.

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?

India has recently declined to be member of RCEP where one of the contentious issue was 'Rule of origin' - strict compliance. Rule of origin = determines the national origin of a product

→ Dumping of Chinese goods ~~to~~ indirectly from the country with whom India has FTA

Need for evolving 'Rule of origin' - an appropriate system

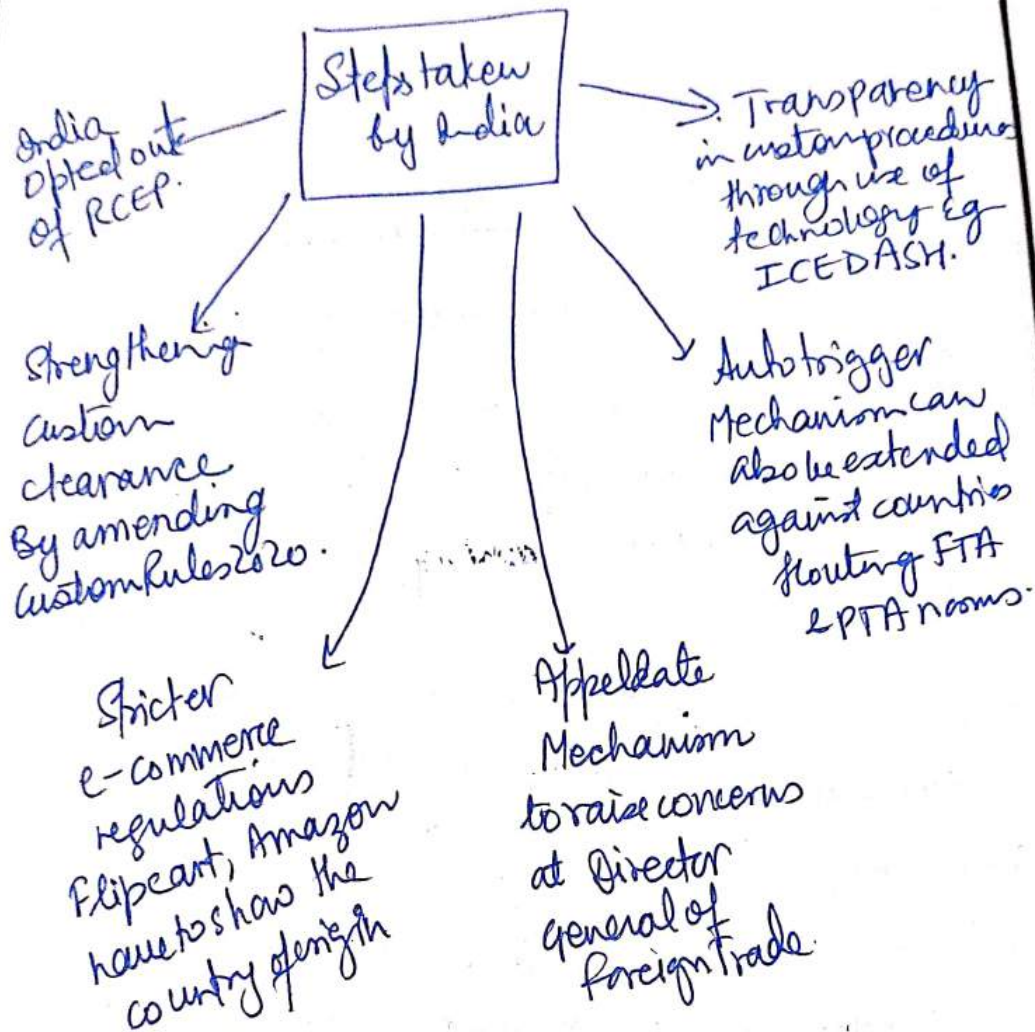
→ Adversely impact the indigenous industries by capturing the market

→ Against the WTO principles of unfair trade practices.

→ Hinders transparency in international trade.

→ Difficulty in custom clearance in absence of Rules of origin

→ Can impact National Security.



Rules of origin becomes essential to ensure fair trade and proper implementation of FTA & PTA, hence an appropriate system to ensure it has to be way forward.

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।

MSP i.e. Minimum Support Price is a mechanism by which government assures the farmers to buy their produce at this 'minimum' price, it is recommended by CACP and announced by the government before sowing season.

Need of MSP in 1960s:

- ↳ to boost up production by providing incentives to the farmers for guaranteed procurement at fixed price.
(1960s - India had to import food grains - USA)
- ↳ For food security - poor population
MSP is prerequisite for PDS system.
- ↳ For implementation of Green Revolution
incentivise HYV seeds, wheat, rice.
- ↳ to accelerate rural growth by promoting agricultural development

Shortcomings of the present system:

- ↳ MSP is announced for only few crops - restricting the crop diversification (Wheat, Rice - predominant)
- ↳ only 4% of produce is procured under MSP.
- ↳ Small and marginal farmers are not benefitted
- ↳ inefficiencies of market - Demand-supply constraints
- ↳ FCI - Food Corporation of India's role is restricted to North India; negligible procurement in Eastern India.
- ↳ Burgeoning food subsidy and decline in public investment in Agriculture infrastructure declining productivity.

Way forward

Diversify crop cultivation -
govt should increase MSP
for crops such as Pulses, Oilseeds
Price Deficiency Payment Scheme

expansion of market for (Bhughtan, Bhanpai)
farmers - recent farm bills

Thus the existing
flaws should be addressed to maintain agriculture
a viable economic activity & double farmer's income

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

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

Climate change is altering the weather patterns across the world which is impacting the vegetation as well as the vegetation.

- India in 2020 has faced locust attack. locust are small flying grasshoppers usually remain in colony and feed on grasses.

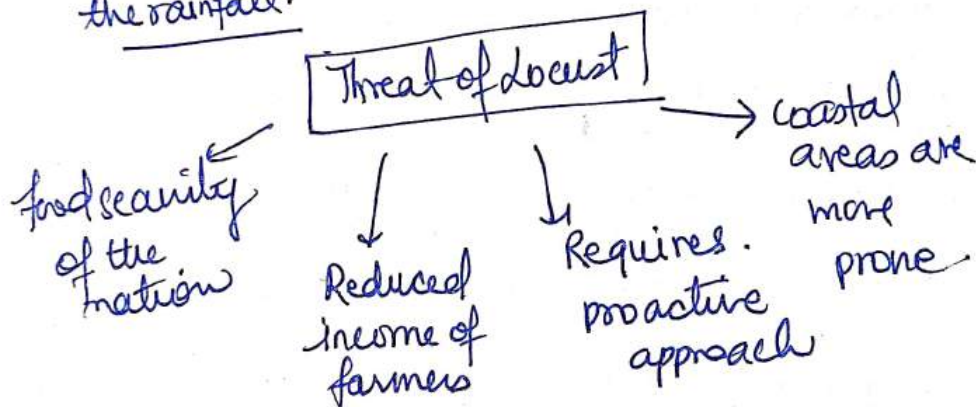


- It is predicted that such attacks would become normal in the coming years to come.

- As the weather and climate is becoming warmer due to global warming → oceans are becoming warmer → cyclones are increasing → Arabian sea is becoming prone to cyclone compared to previous years

→ cyclones are causing rainfall and hence green vegetation is lushing due to which the breeding of locust has increased as they feed on green grass.

- winters are also getting shorter increasing the lifespan of such swarms.
- Monsoon patterns also assist the movement of locusts towards the Indian mainland.
- Warmer Indian oceans ~~area~~ is also assisting the phenomenon due to El Nino and warmer waters positive Indian ~~di~~ ocean dipole also increases the rainfall.



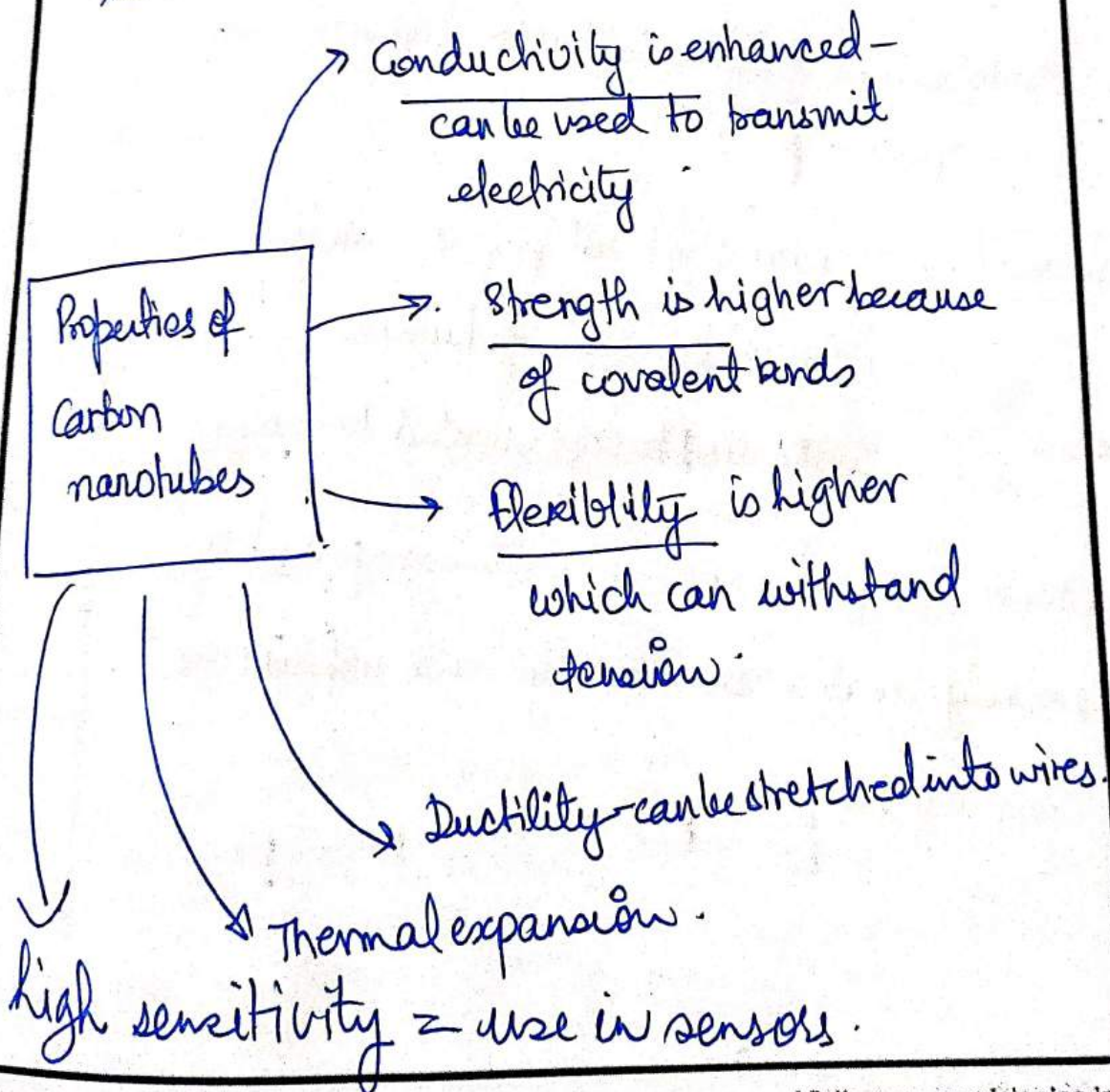
India has established locust warning centre at Jodhpur thus its capacity, and early warning system has to be boosted and farmers should be provided with measures to prevent the losses.

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 are nanomaterial ($< 100\text{nm}$) of carbon element which is rolled into a tube like structure.

The properties of carbon changes when it is reduced to nano scale ($< 100\text{nm}$) which also increases its applications.



Applications of carbon nanotubes:

- In Medical sciences - to deliver drugs into the body
- In transmission of electricity and storage.
- In communication technology
- Manufacturing of synthetic fibres of special quality - heat resistant, stain resistant.
- Manufacturing of electronic devices - conductivity properties.

Concerns — toxicity is yet not properly studied
— harm to the skin of humans.
— costly due to sophisticated technology

Hence comprehensive approach is required to properly analyse the challenge and exploit the applications.

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।

India is considered as the pharma-centre of the world which exports cost efficient medicine to the poor and under developed and developing country of the world.

India is also criticised by the big Pharma tech companies for weak IPR regime in Pharma sector although government has responded to allegations considering public health and poverty in the nation.

Domestic Patent Regime privileges public health as:

- Provision of compulsory licensing - for government to manufacture cheaper medicine without/with seeking permission from pharma industry.
- Evergreening of patent is not allowed
Pharma industry introduce minute changes and again seek patents of the new medicine which the govt does not allow.

- Parallel Importation - importing drugs without the consent of the patent holder for public health.
- Government has control over data exclusivity if the product is in use in foreign countries already for public interest

Concerns

- May discourage pharma industries ~~increase~~ to invest in research & technology
- Concerns by the foreign nations during trade negotiations
- Generic medicines cuts the profit margin of industries

However public health is a major concern in India and generic medicine saves the lives of poor and needy. Thus Drugs Cosmetics Act tries to balance both IPR Regime along with public health

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 व्याप्त तर्कों को स्पष्ट कीजिए।

As the security situation in Indian subcontinent is worsening - aggressive China and irresponsible rogue Pakistan, there has been need to overhaul and modernize our borders.

'One border - One force' effectively means. at a particular border with another country there should be deployment of single force. Currently there are multitude of forces such as ITBP, BSF, SSB, Aissamkiles along with the three military forces.

Advantages of One Border one force :

- Administrative efficiency.
- Unified force with uniform standards.
- Modernisation would be easier with specific focus.
- In house compliance and proficiency in the work force.

→ chances of promotion within the force for the personnel would be easier instead of IPS hijacking all senior level posts

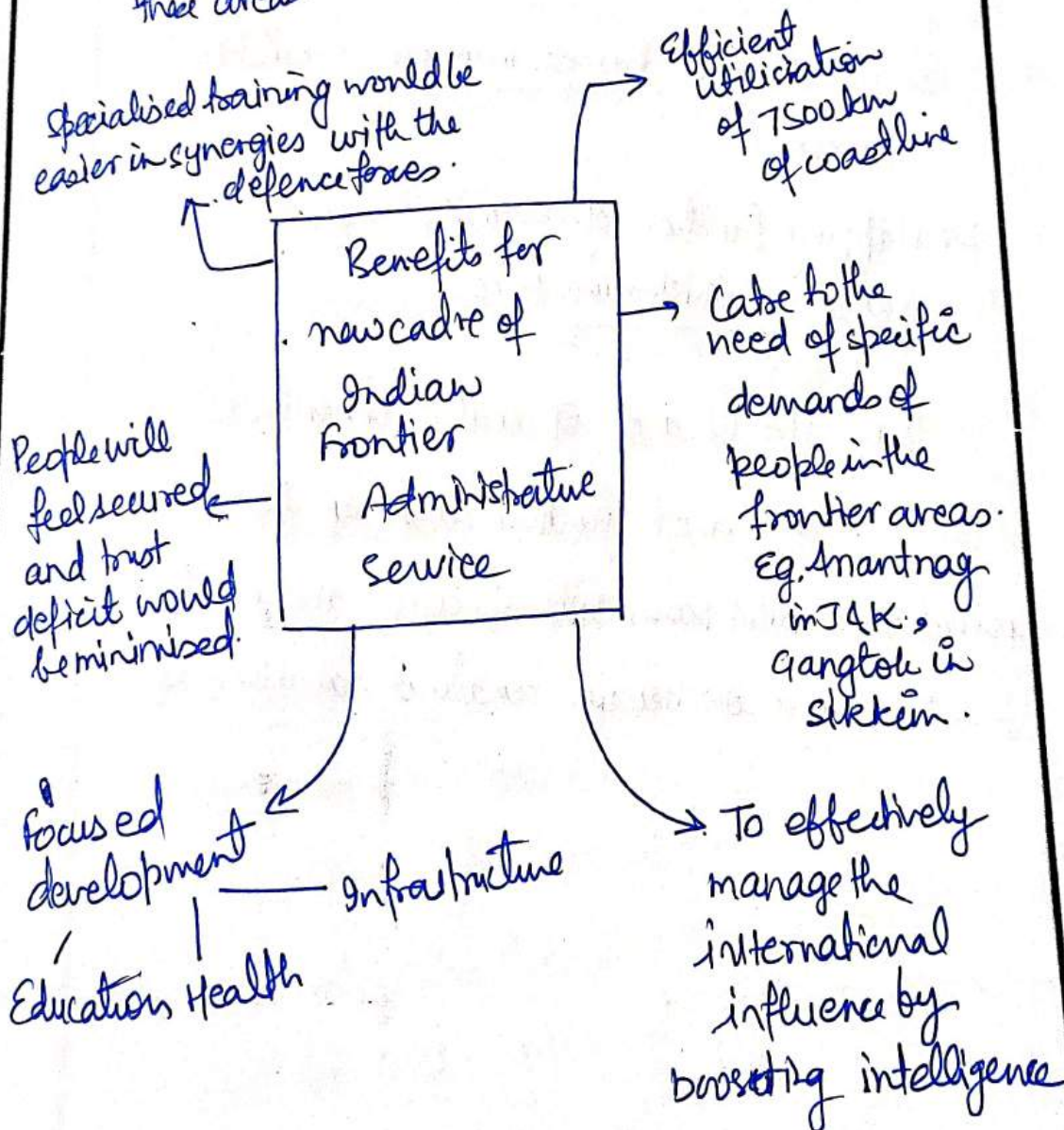
Concurs:

- There cannot be compartmentalisation of forces as there is often need of multi-level responses
Eg- Army along with BSF at India-Pakistan Border - synergies already developed.
Indo-Tibetan force - are trained for high altitude warfare they have to be accompanied with air force etc
- within one border there are different terrain.
~~Ar~~ Arunachal / Ladakh - in case of china
- Sashastra Seema Bal has already developed synergies with Nepal force

Thus there should be more focus on integration, synergies, modernisation, capacity building and gradual attempt to utilise the strength of specific forces. instead of going for one-size-fit-all approach.

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 सीमांतों पर महत्वपूर्ण कार्यों को संपादित करने के लिए भारतीय सीमांत प्रशासनिक सेवा का एक नया संवर्ग बनाने की आवश्यकता का मूल्यांकन कीजिए।

Indian frontiers have different security, political and development needs and thus there has been a need to create a new cadre for these areas.



Concerns for the same:

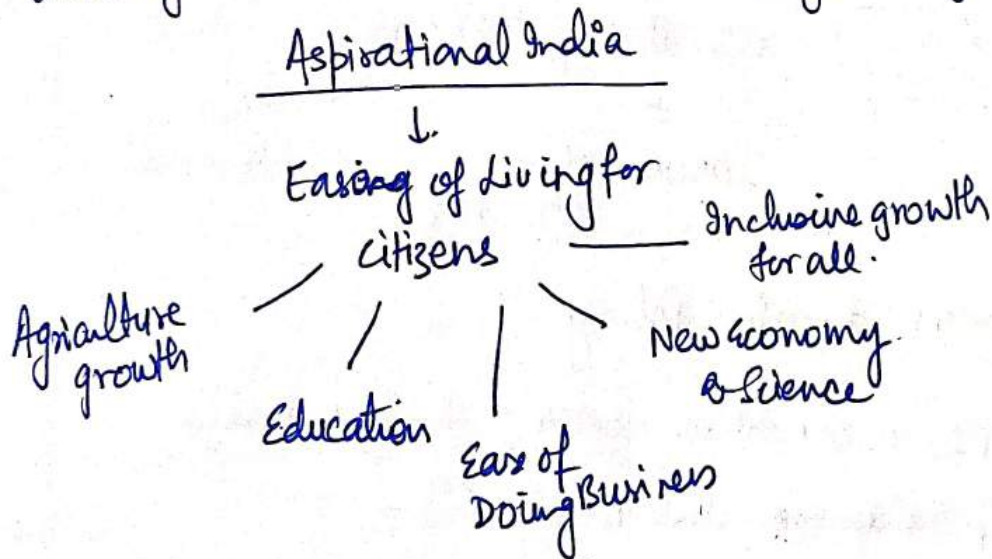
- Central and All India Services are already trained to deal with variety of challenges.
- Synergies between security forces and Indian Police forces - already established.
- Extra funds and trained manpower would be required.
- Overlapping functions of security forces, armed forces and administrative forces.

Thus the idea of Special frontier forces has to be brainstormed further and can be applied on a pilot basis with specific and identified functions and cost benefit analysis has to be made.

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 ऑफ़ लिविंग" (जीवन सुगमता) प्रदान करना है। इस उद्देश्य को प्राप्त करने के लिए बजट 2020-21 में प्रस्तावित ढांचे का विश्लेषण कीजिए।

Union Budget 2020-21 has envisioned a detailed framework to achieve the objective of Aspirational India with focus on Agriculture, Industry and Infrastructure and a Caring Society.



Agriculture Sector

- ↳ provision for constitution 10,000 FPO.
- ↳ Agriculture Infrastructure Fund.
- ↳ Funds allocation for PM FBY, PM Kisan, SHC for all beneficiaries of PM Kisan.

- Cold storage infrastructure
- 'Dhan Rakshmi' women SHG led - village based cold storage and storage infrastructure
- Kisan Rail - for ease of transport
- Livestock health = eradicating ϕ FMD, ϕ other such diseases in sheep etc

Education - allocation of ~99,000 Cr - 59,000 Cr school
+ 3000 Cr - skill education
39,000 Cr higher edu

↳ New Education Policy.

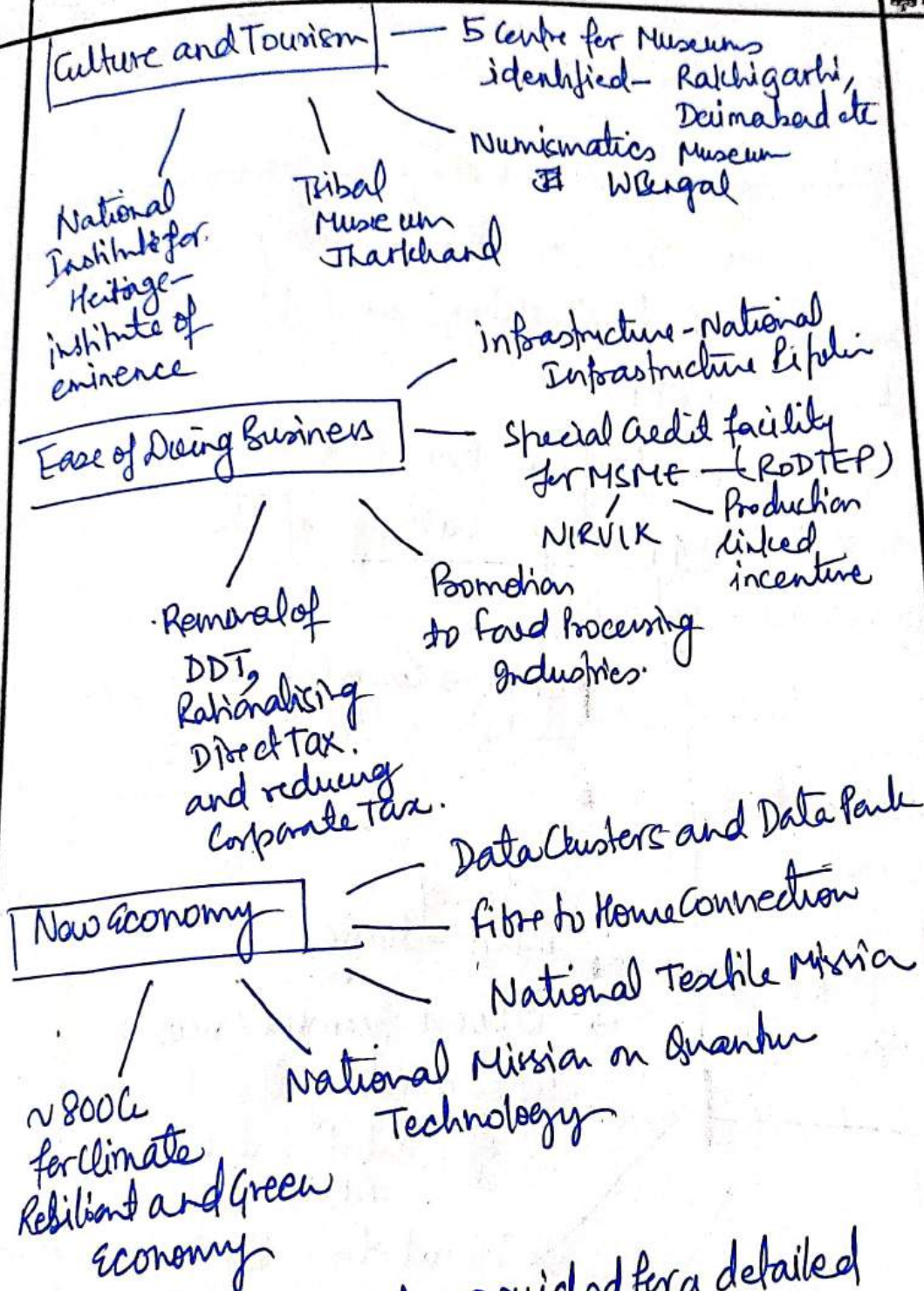
↳ FDI in education sector; Study in India programme = IndSAT etc

↳ National Police University National Forensic Uni

↳ Linking District hospital + Medical college

↳ National Recruitment Agency.

Health sector - Funds for PMJAY
- TB Harega Desh Jeetega
- Health and Sanitation

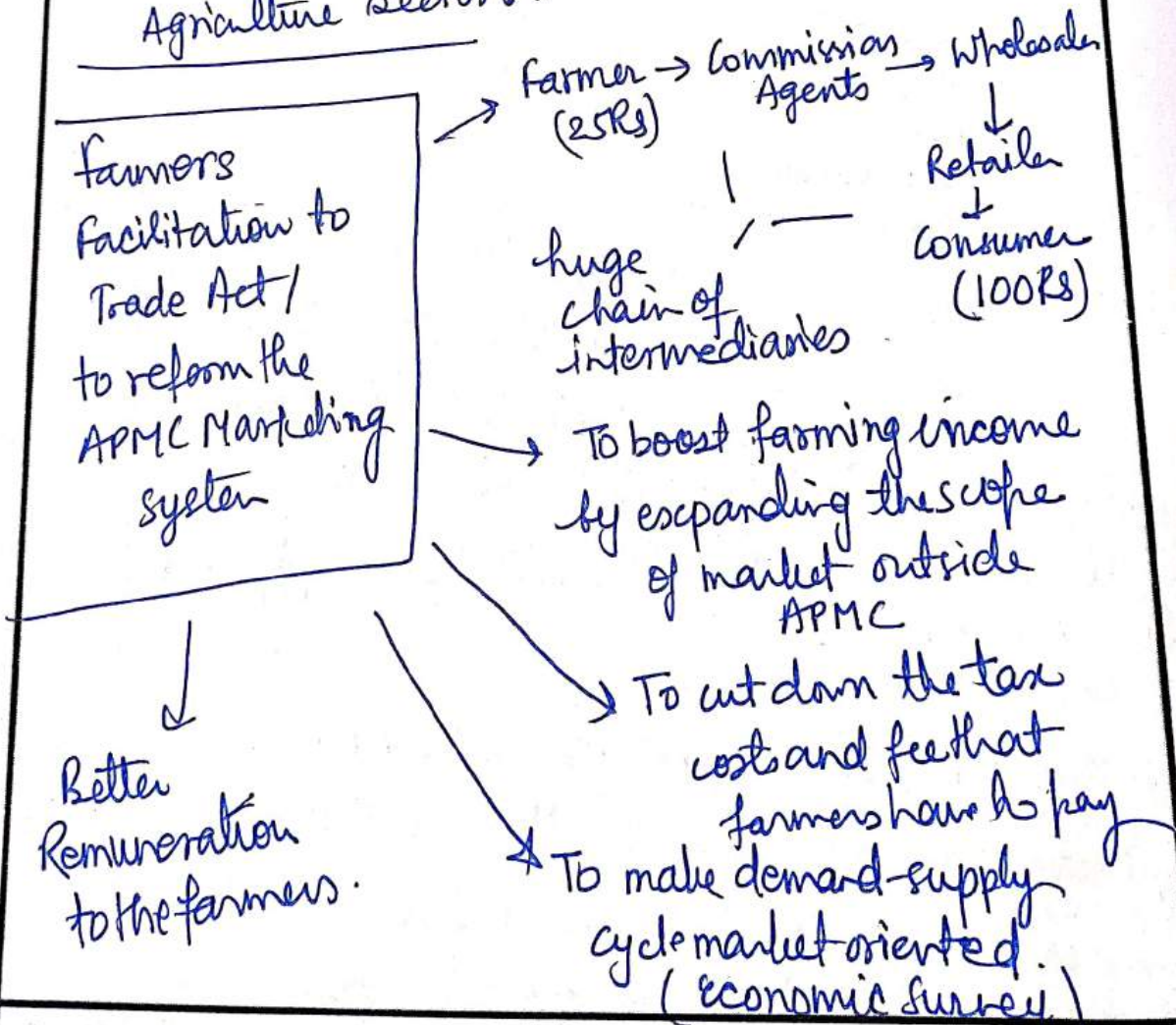


Thus Budget 2020-21 has provided for a detailed & comprehensive focus for different segments for inclusive growth and aspirational India with Ease of Living for all, now focus

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 समाधान करने की आवश्यकता है। चर्चा कीजिए।

India remains predominantly an agrarian economy with 56% population directly dependent on it for livelihood and 17% contribution to GDP.

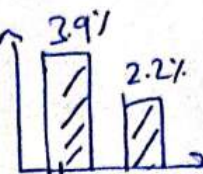
The recent reforms have tried to address some of the long pending challenges of the Agriculture sector.



Farmers' Service
Act - to promote
contract farming

to create avenues for investment
in Agriculture

% age of GDP
Public
investment
in agriculture



to provide for assured
buyer for farmers through
contracts.

Better seed quality,
machine inputs
as per the contract demand

Farmer is recognised
as weaker party
No permanent
structure can be
built and no change
in land ownership.

Amendments in
Essential
Commodities Act

to incentivise private
sector to build cold storage
and stocking facilities.

to ease the government
intervention of import
tariffs.

to promote crop
diversification.

Despite regulation
price control not effective
As recently witnessed in
onion case.

Challenges accompanying these reforms

- Alternate avenues to the intermediaries in APMC
- Proper implementation of e NAM as still ~~no~~ not even half of APMC mandis are linked
- Public investment in Gram Mats

→ Assurance of MSP -- to farmers to allay the fear as it still forms basis for PDS.

→ Diversify role of FCI along with decentralised procurement

→ Strict regulation and grievance redressal mechanism to enforce contracts.

→ 'Input Based Subsidy' to farmers to boost their incomes - Irrigation, ~~Max~~ Farm Mechanisation

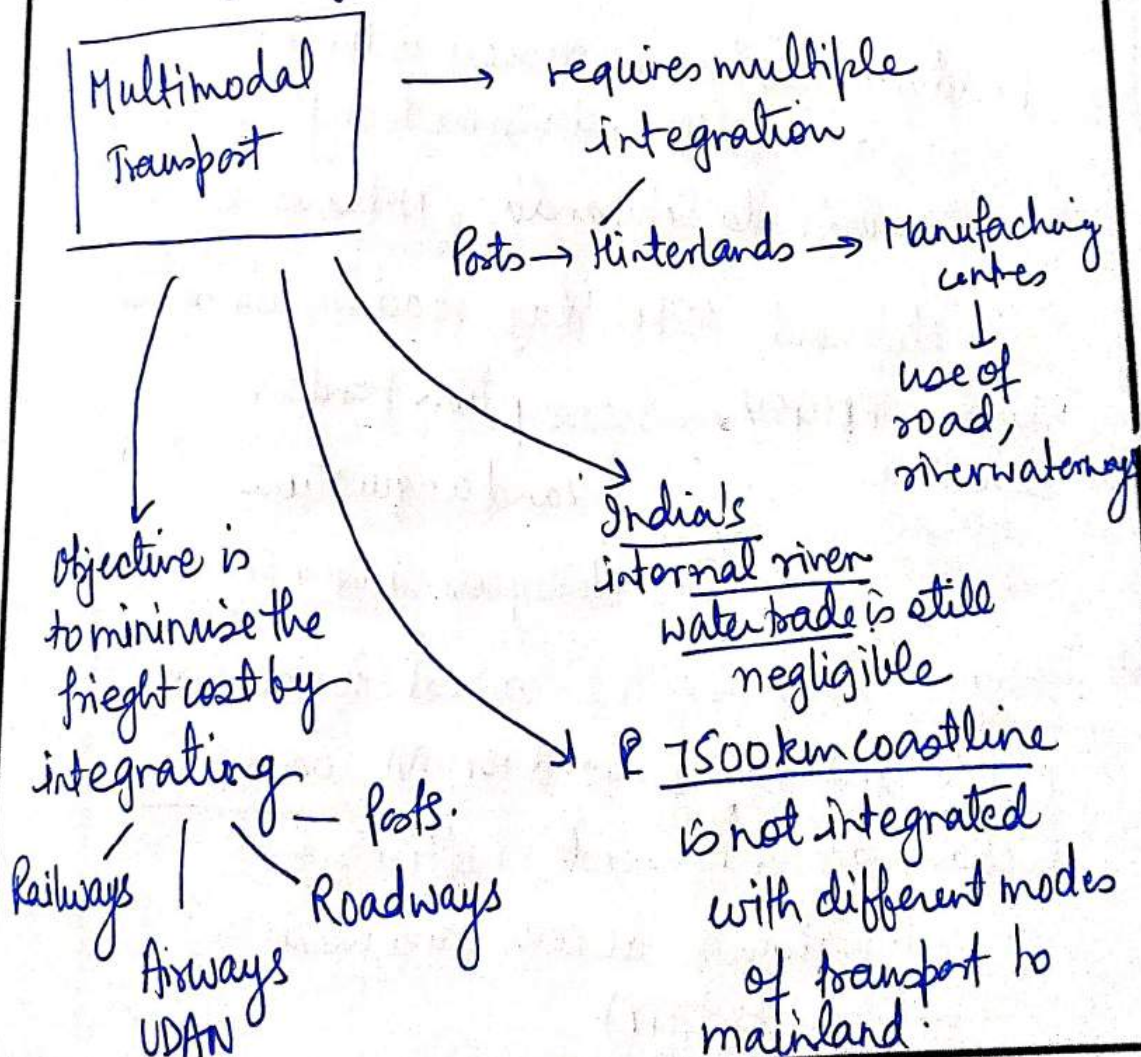
→ Lastly, Agriculture Reforms - Land Pooling
Land Consolidation

Winning the trust of farmers has to be the prerequisite for success of these farmers and government has to address all the fears to move ahead with reform

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 (मल्टीमॉडल ट्रांसपोर्ट) के लिए परिवहन के विभिन्न साधनों के मध्य विविध रूप से एकीकरण की आवश्यकता है। पुष्टि कीजिए। भारत के लिए बहुविध परिवहन में जुड़ी चुनौतियां और अवसर क्या हैं?

India's logistics costs is still one of the highest in the world (14% of GDP) highlights the need to utilise the geographical features-rivers, elevation etc to build logistics infrastructure for ease of doing business.



Challenges

→ Modernisation and electrification of Railways is still pending with negligible use of Lighter coaches. The recently inaugurated freight corridor can be a way forward.

→ Irrational tax structure with cross subsidy making freight cost higher and thus leading to higher operational cost.

→ Roadways has been a success in the last few years - with mission mode implementation of Bharatmala, Shikhar, National Highway development, 35 km/day - road was constructed under PMGSY.

Challenges remain

Corruption tends

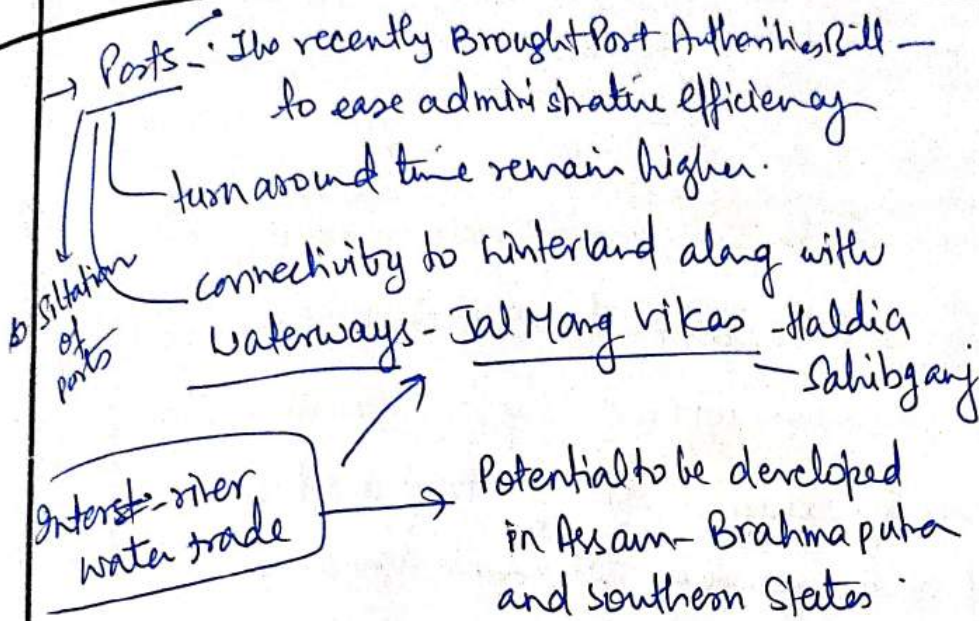
Land acquisition

delays causing higher costs

→ Airways UDAN - Regional connectivity scheme

↳ can be way forward for NE connectivity.

Challenges - higher cost, inefficient utilisation of airports and needs Investments (PPP)



Opportunities & Way forward

- Integration can not be smooth unless
specific challenges of these multiple transports
are addressed.
- Bharatmala ↔ Sagarmala ↔ UDAN ↔
project, strategy has to - Jal Marg Vikas -
be evolved to link them efficiently and
boosting growth of industrial centres.
- Hence synergies have to brought by linking them
all and addressing the inefficiency in each
mode and providing administrative support

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 अनौपचारिक क्षेत्र और संबद्ध श्रम बल की सुमेद्यता को उजागर करती है, लेकिन साथ ही यह देश में औपचारिक-अनौपचारिक अर्थव्यवस्था की गतिशीलता को संतुलित करने का एक अवसर भी प्रस्तुत करती है। चर्चा कीजिए।

COVID19 has exposed us that the workers in informal sector lives without any job security, social security benefits, although they are the drivers of Indian economy but hasn't received proportional attention.

Vulnerabilities of workers in Informal Sector

→ In the fear of Labour laws the ~~com~~ industries are lethargic and are not expanding the capacities leading to ⇒ 'dwarfism'
↓
falling productivity.

→ Lack of implementation of Employee Provident Fund scheme due to poor regulation

→ Wages remaining lower than the Minimum floor wages.

- Poor skilling with no effort from the industrial class to build the capacity.
- Poor academic-industrial synergies.
- Poor safety provisions in the informal sector.
Recent blasts in Delhi - poor safety mechanism puts them at mercy. (Vishakhapathan-)
- 98% lab 97% labour force in informal sector - becomes imperative and therefore these concerns have to be addressed.
- 144 odd labour laws. - creates hurdles both for employee and the employer.
- No agreed definition of Migrant labour
and lack of interstate synergies for their benefits.
- Opportunity to Rebalance - formal-informal economy dynamics :-
- Economic Survey has highlighted the need of documentation and formalisation of work force.

- Rationalisation of the labour laws.
 - ~~do~~ Database creation with coordination of Ministry of Labour, Home Ministry and state govt.
 - Investment in skilling and Reskilling as Industry 4.0 unveils and there is a need to upgrade the skills.
 - Incentivise industries to expand capacities → Better productivity
- ```

graph LR
 A[More growth] --> B[More demand]
 B --> C[Better wages for labour]
 C --> D[Better productivity]
 D --> A

```
- cycle of virtue will be developed.

→ P

PM has recently highlighted the need for 'Shramyev Jayate' i.e. welfare of labour has to be our objective government thus has to incentivise ease of doing business as well ensure labour-welfare - for their ease of living.



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

गैस आधारित 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।

As India has recently highly elevated its target of renewable energy of 475GW by 2030, 'gas based economy' becomes crucial to be worked upon.

### Drivers for Gas-based economy

- ↳ multiple uses - fertilisers, transport etc
- ↳ to reduce our oil imports and thus maintain current account deficit.
- ↳ Pollution-free source with different avenues - hydrogen based, Methanol based, biogas etc, CNG, H-CNG etc
- ↳ Cheaper, easier to transport.
- ↳ Unexplored reserves - Coal seam gas, Krishna-Godavari offshore resource.
- ↳ Inexhaustible resource for future economy.

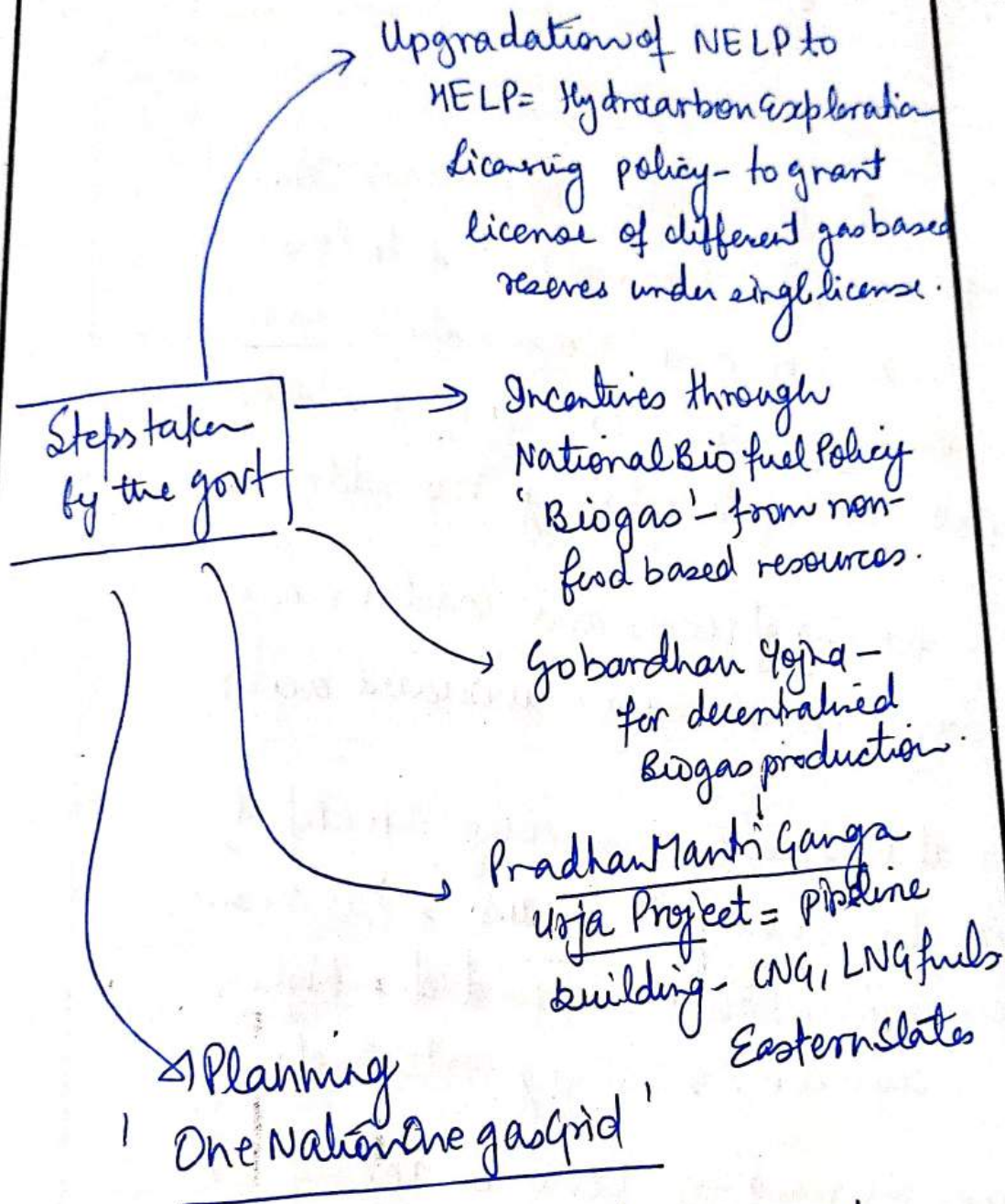


## Challenges

- ↳ Requires investments in Research and technologies to boost up the capacity.
- ↳ Share of Gas based energy still remains less than 10% with more focus on Coal based thermal plants.
- ↳ Dependence on gas imports as gas reserves in India are not explored yet.
- ↳ Over dependence on cheaper coal based energy and solar power, wind power competition.

Thus challenges have to be addressed to realize the unexplored potential.





This future economy has to be gas based economy as one of its pillars. Thus government along with pvt sector has to build capacities for the same.



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

जनवायु परिवर्तन और संबद्ध घटनाएं तटीय जनसंख्या की सुशेयता को बढ़ाने हुए समुद्री एवं तटीय पारिस्थितिक तंत्रों को खतरे में डालती हैं। परीक्षण कीजिए।

The World Meteorological Organisation in its 2019 Report has highlighted to 'the menace of ocean deoxygenation, ocean acidification and ocean warming which points towards future challenges to be addressed

Endangering of Marine and Coastal ecosystem due to Climate change & associated events

→ Global temperatures are rising (IPCC report)  
~~are~~ also warming the oceans → As oceans are warming → thermally expanded → higher precipitation → raising water levels

→ Ocean warming ⇒ Coral Bleaching  
↓  
sensitive to heat,  
precipitation and oxygen levels  
called as tropical rainforests of oceans ⇒



- they are home to millions of diverse species.
- changes in the Atlantic-Indian-Pacific ocean conveyor belt - that regulates the temperature and rainfall patterns - changing migration of marine species.
  - increases ~~the~~ events of Cyclones, tsunamis also impact the coastal ecosystem like mangroves often leading to their destruction.
  - Melting of oceans glaciers & ice ~~Arctic and Antarctic~~ ecosystems are changing  
 ↳ also changing the salinity & sea levels.
  - changing temperature and climatic conditions are impacting the productivity of the oceans which consequently changes the marine lifecycle.  
 \* phytoplankton → zooplankton → fishes → sharks.
  - Wetlands and Estuaries = which hosts diverse marine organisms are also adversely impacted.



→ Vulnerability of Coastal population

- ↳ livelihoods - fisheries getting impacted
- ↳ Increased flooding and rising sea level
- ↳ Climate refugees as entire islands are getting submerged - Nauru eg.
- ↳ Disasters → cyclones, tsunami, tornadoes etc.
- ↳ Health & well being - diseases - Malaria etc.

Global cooperation is required for comprehensive ocean health, preventing dumping of plastics, microplastics, oil spills etc and building to disaster resilience at community → national → international level has to be way forward.



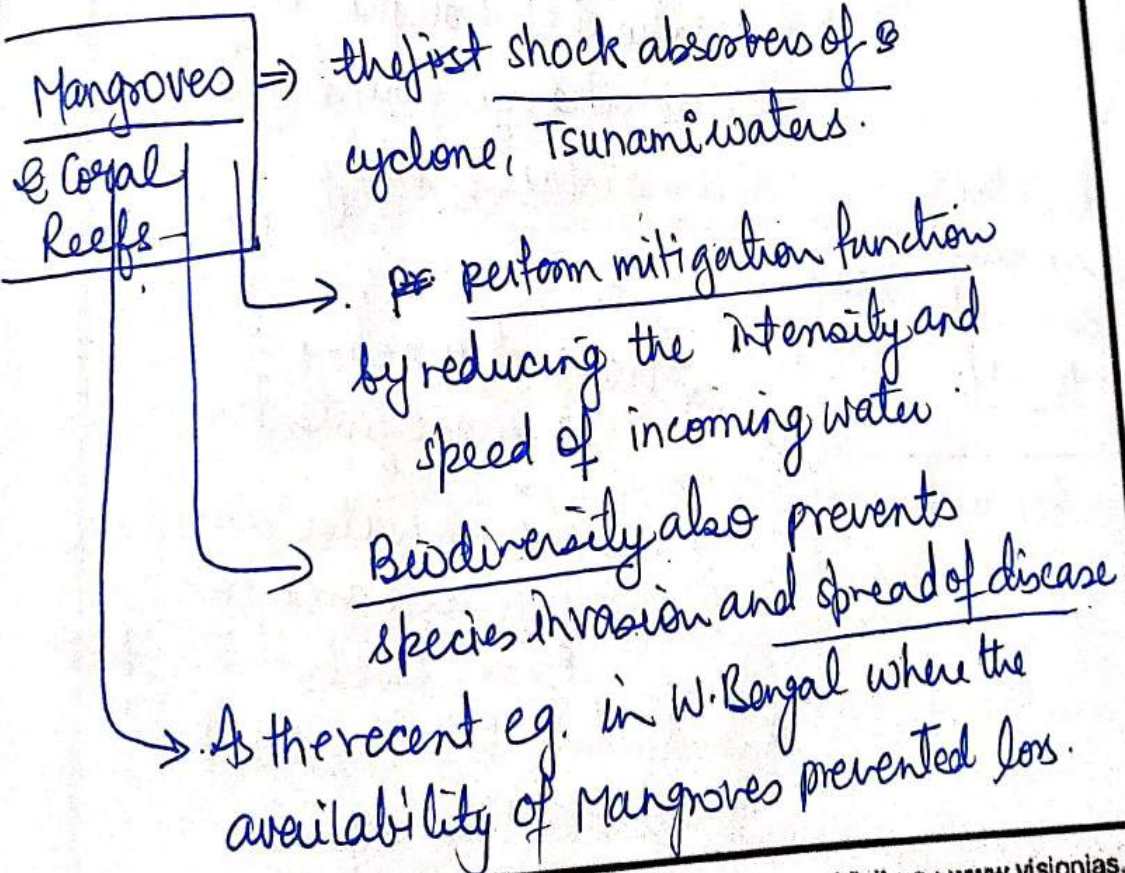
17. Using examples, highlight how natural ecosystems perform different hazard mitigation functions.

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

(250 words) 15

With changing climate, the vulnerabilities and uncertainties across the world is increase, it becomes necessary ~~to~~ <sup>to</sup> not only manage but also prevent, prepare for hazard mitigation through all methods.

Nature if causes disaster it also provides resilience in the form of Natural ecosystem—





### Wetlands

- flooding is prevented as they act as sponges.
- prevents soil erosion
- mitigating urban flash flooding.

### Forest Ecosystem

- minimise impacts of landslides.
- vegetation cover prevents soil erosion, slows down the movement of water as the glacier melts.

India's forest Policy aims to increase forest cover to 33%.

- moderating influence during heatwave.
- mitigation of droughts & as they recharge groundwater and maintain fertility.

### River Ecosystem

- Proper channeling of river management
- discharges water from pressurised area to lower levels
- sand mining to be regulated to maintain their capacity.



Dry lands - acts as patches to restore the degraded land.

- alternative livelihoods during disaster
- prevents sheet erosion and recharges groundwater and also absorbs floodwaters.

Thus the different ecosystem acts as shelter belts, flood absorbers, groundwater rechargers, stress absorbers and real first time warriors during ~~the~~ hazards.

Thus Sendai Framework along with National Disaster Management Plan which envisions their mitigating roles have to be preserved, recharged and rejuvenated.



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

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

Genome Sequencing is the method by which the whole pattern, series of genes in a species is mapped and arranged in database to analyse, compare and further such applications.

Genome = pattern / series of the genes of a species.

23 pairs in humans form its genome - unique for each individual.

→ A understanding diversity & its intricacies.

→ Regulated by Environment  
Biotech Act - 'Genome Sequencing guidelines (for humans)

Genome Sequencing Benefits

→ Precision Medicine.

→ treatment of genetic disorders  
Can be done after studying



## Challenges

- requirement of sophisticated and complex technology
- trained manpower and special skill set
- Costly and financial constraints
- lack of proper regulations
- ethical & privacy concerns - racial segregation, disclosing of diseases, genetic disorders.
- Resource constraints with developing countries.

Through out the world projects such as Earth Biogenome, Asian Genome are being undertaken to map different persons across different regions. India has also undertaken Indigen Project —



- ~~Lead~~ Led by Department of Biotechnology along with private agencies.
- Pilot project for 10,000 genomes at first to be scaled up later.
- Time Bandhwar implementation
- Research samples across different region eg. Dibal.
- Ethical and Privacy concerns are addressed

Genome sequencing is a biotechnological application to understand the basic dogma of life and further build human capacities to prepare itself for future pandemics as well.



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

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

India is a multiethnic, multireligious democratic society which is engulfed with threats such as communal disharmony and radicalisation as its internal security threats.

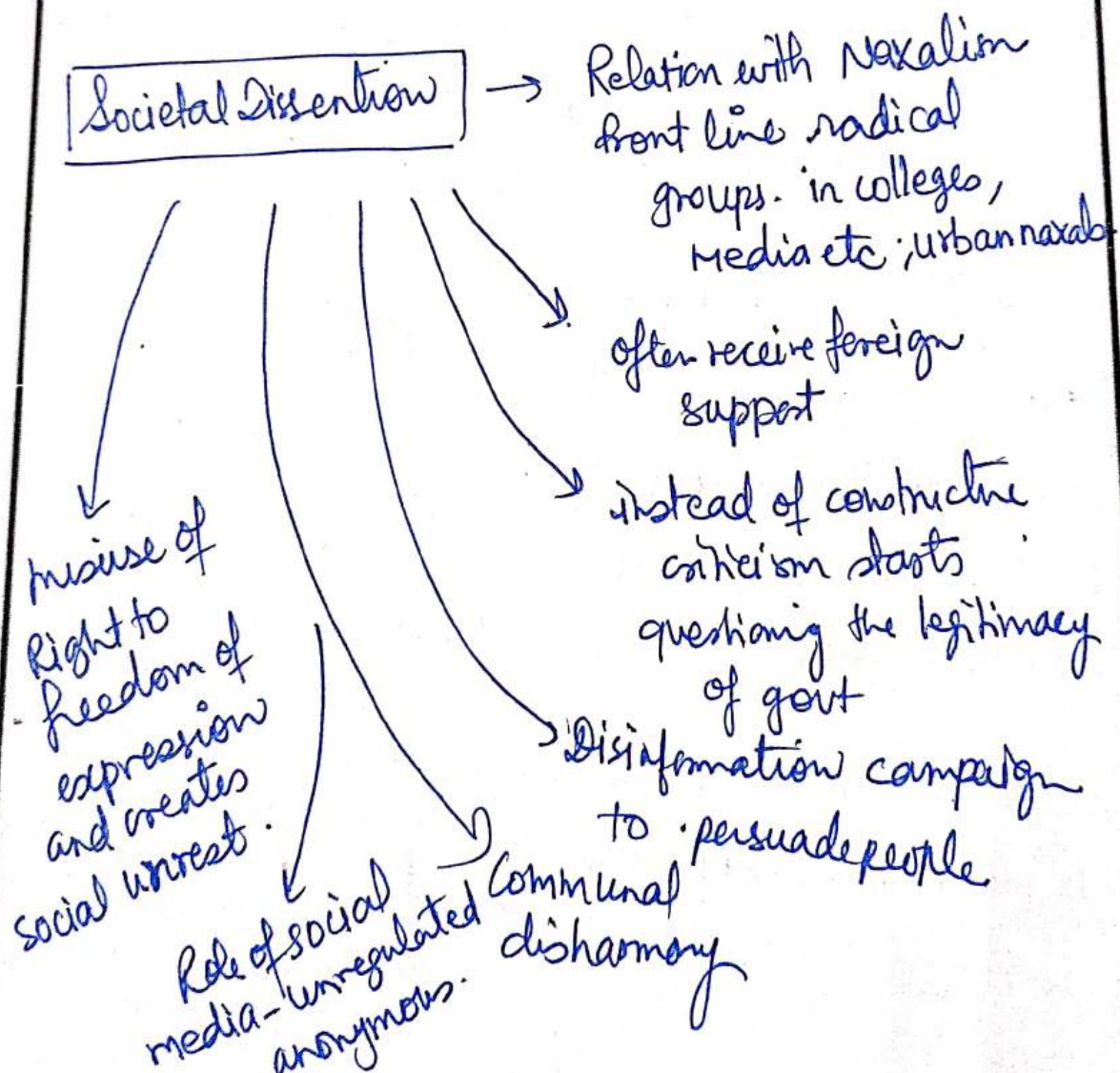
Radicalisation as breeding ground for cyber and transnational terrorism:

- Radicalisation implies spreading and indoctrination of extremist ideas to challenge the sovereignty of state or to create disturbance in law and order.  
Eg- Islamist fundamentalism, Hindu Extremism
- Act as internal base for nonstate actors to plant terrorist attack — conventional — non-conventional.  
Eg. SIMI for Jem, LeT — cyber threats.



- creates separatist tendencies among local population and exploit the situation to plan attacks.
- often or trained engineers those radical groups through social media creates indoctrinated videos and also find vulnerabilities in the cybersystem — blackmailing, Ransom etc.

### Societal Dissention





Thus Both Radicalisation and Societal Dissent  
are emerging as potential internal security threat.

But concerns have to be addressed -

- ↳ state should not suppress democratic dissent
- ↳ those who surrender must be given opportunity
- ↳ Rehabilitation mechanism and deradicalisation  
with community support.
- ↳ State has to boost its cyber security infrastructure  
along with support from ~~para~~ social media houses.
- ↳ transnational connections to be investigated  
with intelligence.

Thus, India must allow democratic dissent  
but must proactively avert dissension tendencies  
for national security



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

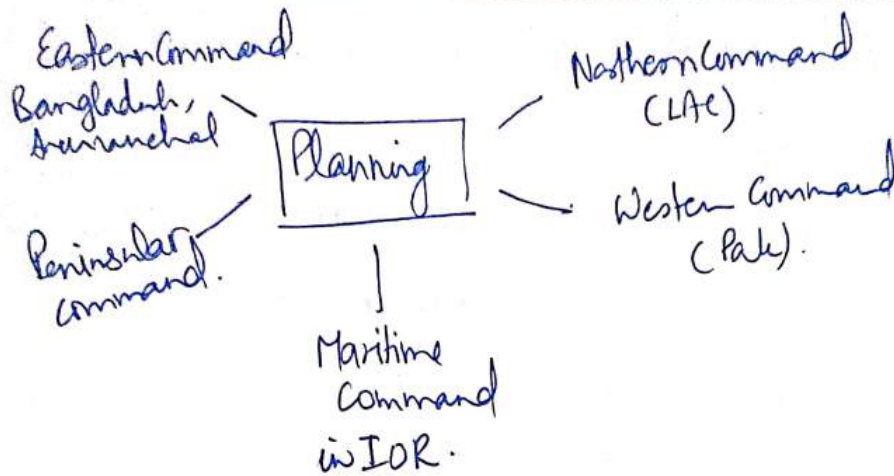
उभरती हुई सुरक्षा चुनौतियों को देखते हुए, चर्चा कीजिए कि क्यों एकीकृत थिएटर कमान की स्थापना को महत्वपूर्ण रक्षा सुधार के रूप में देखा जा रहा है।

There are total 17 Theatre commands in India with 7 each of Army and Navy along with 3 of Airforce and 2 integrated theatre Command (Andaman & Nicobar).

Establishment of Integrated Theatre Commands:

- to build synergies among different forces and built up the capacity.
- becomes imperative as rising challenge from Aggressive China.
- Security doctrine has to be comprehensive including Naval frontiers if India wants to act as Net Security Provider in Indian Ocean Region
- Success during the Bangladesh war - when forces were synergised





- ⇒ channelisation of resources to build up the integrated capacity as per requirements.
- ⇒ systematic acquisition of defence equipments.
- ⇒ in consonance of Chief of Defence Staff - integration at institutional level.
- ⇒ with rising importance of outerspace, space command can also be looked into.
- ⇒ Shelkar Committee & Kargil Review Committee has given support to the idea.



- ⇒ Quicker response and mobilisation in time of threat
- ⇒ Intelligence sharing, diplomatic capacities, advice and coordination based decision making.

Although it is challenging task but National security cannot be compartmentalised and need a comprehensive and integrated approach - requires brainstorming & resource mobilisation

