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GENERAL STUDIES (TEST CODE : 1524)

Name of Candidate	Abshita Gupta		
Medium Eng./Hindi	English	Registration Number	318482
Center	Online	Date	24/12/2020

INDEX TABLE		
Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7	10	
8	10	
9	10	
10	10	
11	15	
12	15	
13	15	
14	15	
15	15	
16	15	
17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

1. 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)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI** इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. 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।
6. Word limit in questions, if specified, should be adhered to.
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. 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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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.

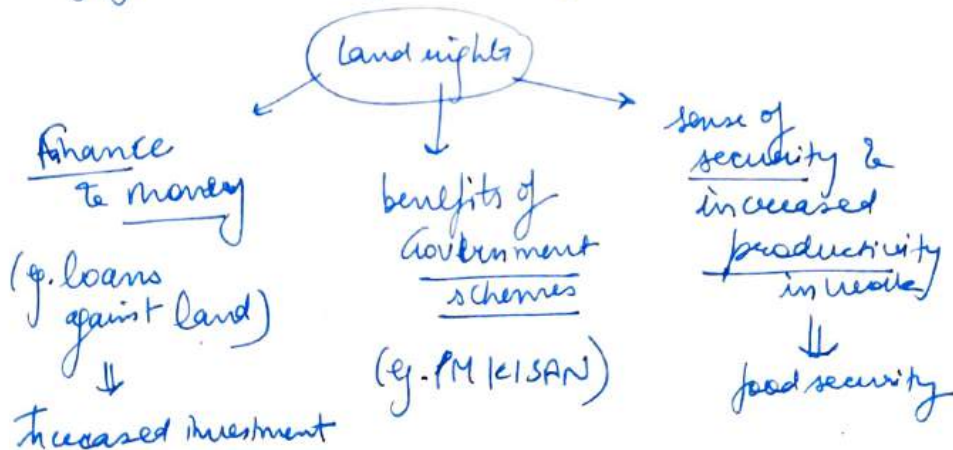
(150 words) 10

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।

Tenancy reforms are part of land reforms in India that ensures "land to the tiller of soil"

Importance
 (need)

I. Land rights → The tiller of soil have no land rights while the absentee landlord enjoy all the benefits & rights.



II. land consolidation → To ensure more per hectare availability of land.

(avg. size of Indian holding is 1.02 hectare)

III. Equality & upliftment of poor :-

The basic motive of land reforms & schedule 4.

Significance of Model land leasing act

↓
framework provided by NITI Aayog.

⇒ leasing of land for cultivation and agricultural purposes for a period of time. ⇒ know land entitlements & land rights

⇒ Sense of security to the tiller of soil. → ↑ Productivity

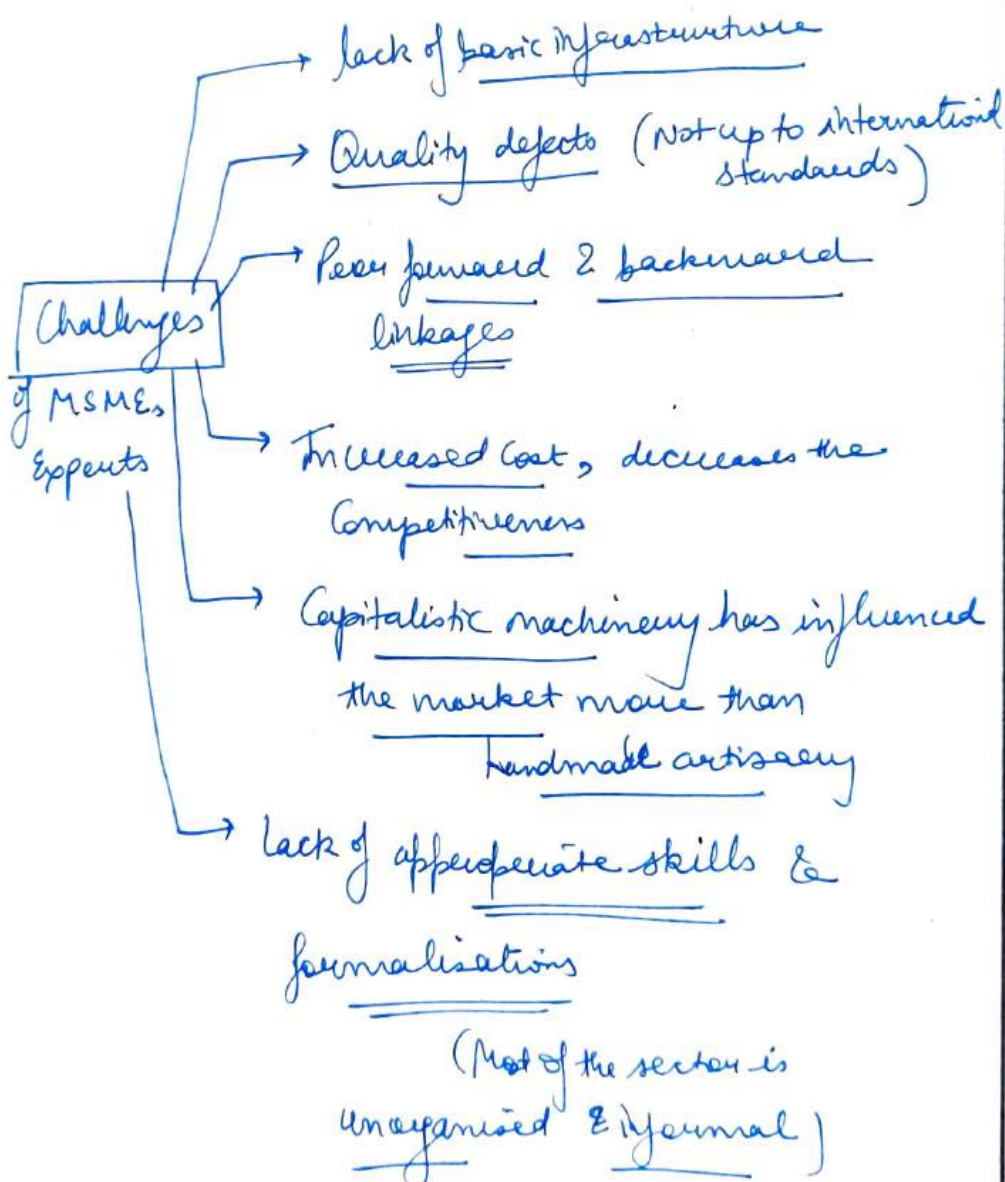
⇒ A fixed amount of produce will be provided to owner of land as rent.

Similar acts in operation Bargah formed the successful model of land reforms in Bengal and exemplary for rest of India.

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 formed the greater part of Indian economy. This sector contributes to ~40% of Indian Exports.



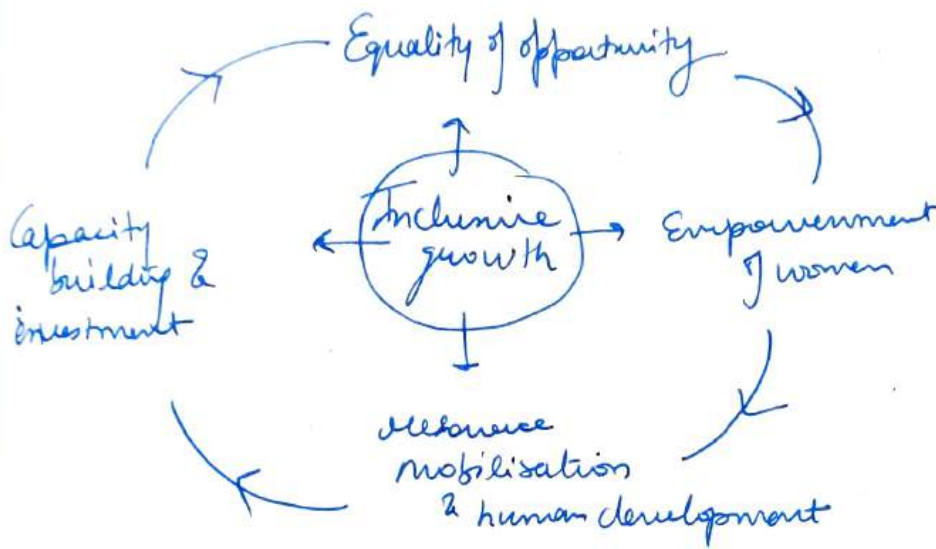
Government initiatives taken :-

- 1.) Export finance → Interest Subvention
Schemes for MSME (2-1.)
eg. PM MUDRA scheme
- 2.) NIRVIK scheme as announced in
Union Budget 2020-21
- 3.) Export automation with online portal.
- 4.) Special Export Zones (eg. SEZs)
- 5.) Specific schemes for booshy MSME sectors
eg. ASPIRE, SFURTI, etc.
- 6.) skilling & upskilling
eg. STRIVE, SAN KALP, Skill India
- 7.) Special package for MSME sector in
Aatmanirbhar Bharat with COVID-relaxations

MSMEs form the future of Industry (labour
intensive) that India aspires for on \$5 trillion economy

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 मंथारणीय विकाम लक्ष्यों की प्राप्ति जटिल रूप से जुड़े हुए हैं। चर्चा कीजिए।

Inclusive growth is part and parcel of the directed Sustainable development goals. (SDGs)

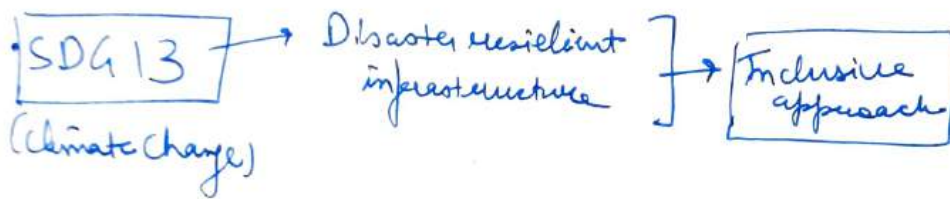
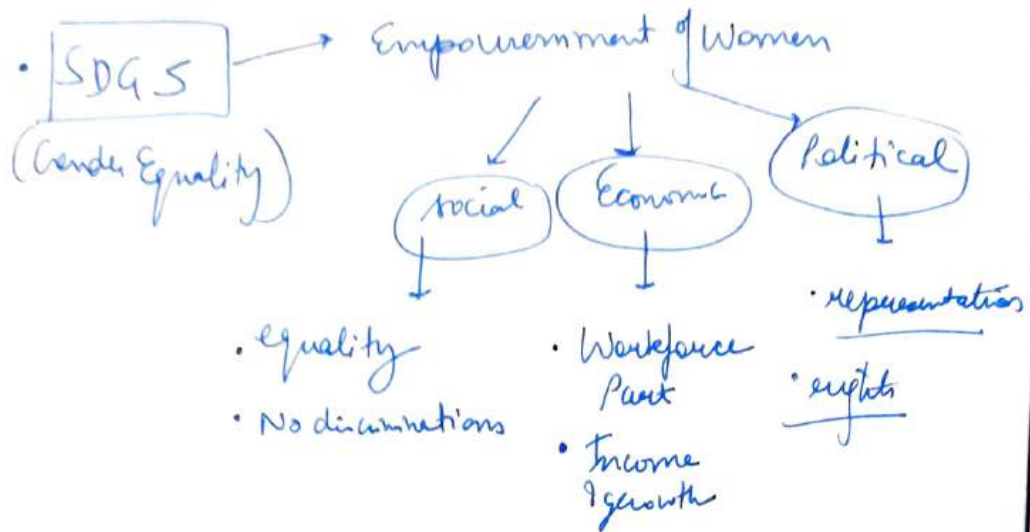


Linkage →

Examples

• **SDG 1** (No Poverty) → financial inclusion → (Jan Dhan) G. Bank accounts
 → social inclusion (eg. No discrimination)
 → Political inclusion (eg. Representation in Panchayats & EWS)

• **SDG 2** (Zero hunger) → ICDS
 → Anganwadis, PDS } → Inclusive growth



* The components of human development itself fulfill the Goals like SDG 2, SDG 3, etc
(Hunger) (Health)

* Equality of opportunity along with Capacity building will bind Other sustainable goals together on path of inclusiveness.

"Country cannot fly on one wing" ~ Swami Vivekananda

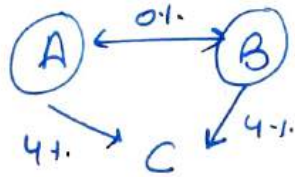
4. Highlight the need for evolving an appropriate system of Rules Of Origin in regional trading arrangements. What steps have been taken by India recently in this regard?

(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?

Rules of origin helps in identifying the origin of product of trade in regional agreements to ensure the desired benefit.

eg. Free trade agreement between Country A & B



Need for rules of origin →

1. Ensure the origin of product from the country of regional agreement.
(eg. Country A & B)
2. Emerging Global Value Chains give rise to spaghetti bowl syndrome
↳ diversion of products through 0 tariff countries to gain benefits.

3. Prevent trade war & currency war effects.

(e.g. China - USA)

• Steps taken by India →

1. Rules of Origin Certificates

Can be taken
online

approved by
Director general of
foreign trade

2. Mandatory checking of RoO Certificates at port entry.

3. Mutual agreements between co-operating nations of regional trade agreements.
e.g. India - Bangladesh.

The origin of product also seems to be important in time of international diplomacy and war-like situations. Such steps were in right direction to ensure right trade.

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 refers to minimum support price that is ensured by government to farmers for buying of their produce if prices fall below a set desired level.

$$MSP = A_2 + FL + \text{Cost of land rent} + \text{Cost of interest \& inputs}$$

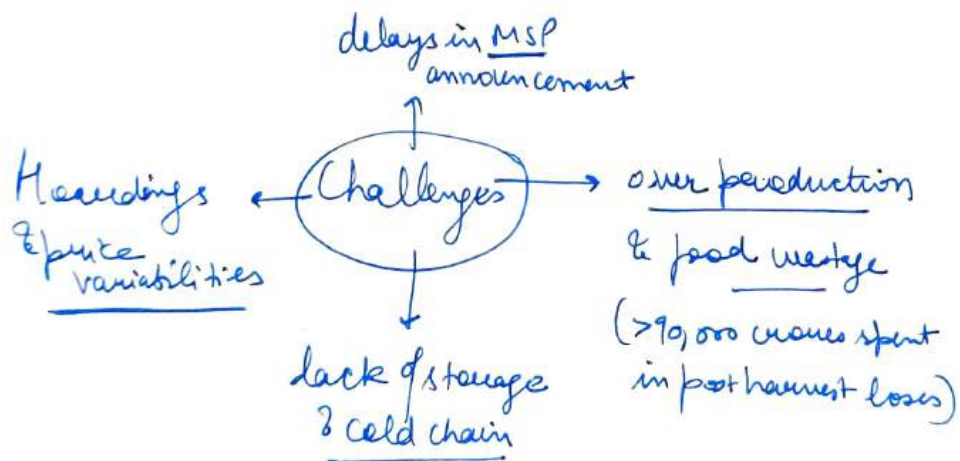
(as recommended by M.S. Swaminathan)

The creation of MSP in 1960s had certain reasons →

- 1) scarcity of food grains & insecurity
(government need to ensure food for all)
- 2) Low productivity of land & crops
with low demand in market.
(decreased prices)
- 3) High dependency on monsoon &
thus incidents of famines.
(large number of farmer suicides)

Relevance of MSP in Current Econ

- 1) MSP though non-statutory, provides sense of security to farmer & his production
- 2) In case of crop failures or crop overproduction (huge dependency on monsoon; >70% is rainfed)
- 3) Prevent cooperativisation, privatisation and monopolisation of agriculture markets.



MSP forms the spiritual security a farmer has from government to ensure his livelihood while a choice in between other upcoming options. eg. E-NAM

6. Examine the link between the recent locust attack and climate change.

(150 words) 10

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

FAO had warned India of "Outbreak" of locusts in Western parts of Rajasthan, Gujarat, etc. They travelled from neighbouring region of Pakistan, Arabian peninsula, etc

Link between locust attack
& climate change

Preferred Conditions for locusts ⇒

- 28-32°C temperature
- low vegetation
- moist conditions for larvae & breeding
- dry conditions for adults

Usually, the dry conditions of deserts prevent swarming of locust & proliferation of larvae.

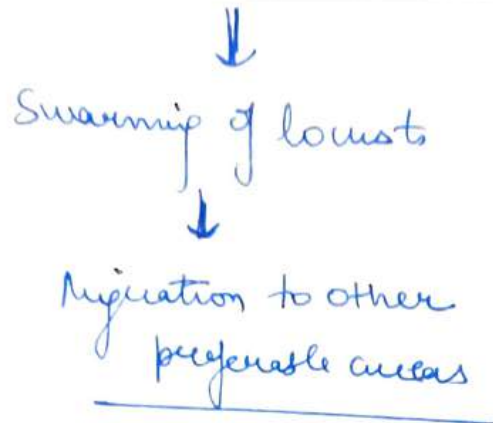
Climate change

↓ rise in temperature

Increased rainfall & moisture

Conditions in deserts of
Arab & Western India

(Increased
cyclonic
activities)



Thus climate change has provided the breeding grounds for locusts that led to huge crop loss, food wastage, air traffic, etc.

The recent increased cyclonic activities in Arabian sea like Nisarga, Kyau, Maha, etc. further provide threats.

- Guidelines of FAO :-
1. Monitor areas with (day) temperature 27-32°C
 2. Early stoppage of breeding by use of pesticides & insecticides
 3. International collaborations

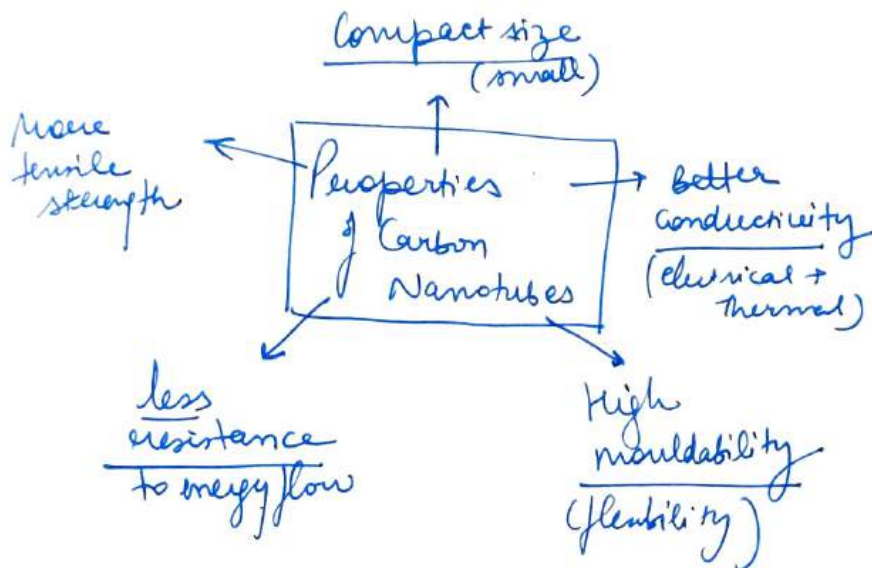
Climate change is the worst threat to food security

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 advanced structures with changed properties due to reduced size (Nanotechnology) \rightarrow (1-100 nm)



Application \rightarrow

① Health & Medicine

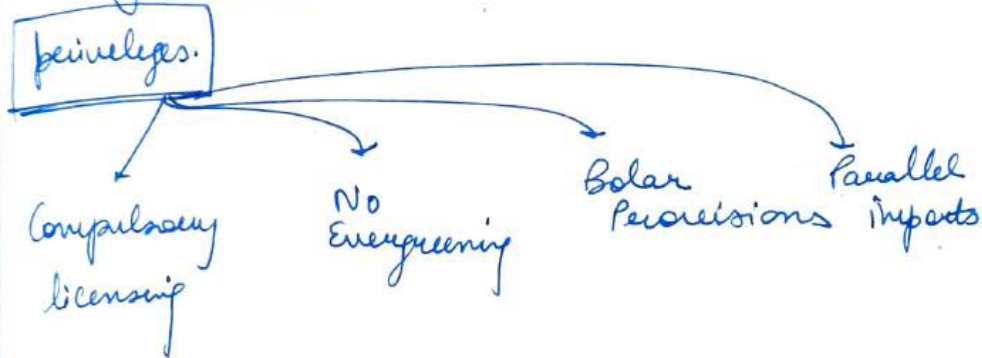
- detection of diseases (eg. TB detection device)
- formulation of targeted drug therapies. (eg. Capsule based formulations) (Nanobots)

- ② Electronics → Internet of things, Computing, etc.
- ③ Agriculture → Nanosensors for detection of soil quality.
- ④ Fire detection sensors in disaster management.
- ⑤ Superconductivity & more efficient energy use
- ⑥ Gene therapy & treatment of genetic diseases
- ⑦ Advanced photographic cameras & Machinery.

Carbon nanotubes due to their altered & heightened properties can be used in various advancements with more research & development.

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's patent regime comes from the Intellectual Patent policy which grants both process and product patents for time period of 20 years. However, there are some



I. Compulsory licensing →

In case of health emergency → if company has very high cost
→ if company unable to provide the required drugs

→ Government can issue compulsory license to local company for drug requirement.

→ some royalty will be paid to the patentee by local company.

II. No evergreening → changing the small modifications in drugs for new patents.

→ Ensures ~~free~~ low cost generic drug availability to Indians.

(eg. PM Jan Aushya stores)

III. Bolar Revisions → Near the completion of a patent, another company can start manufacturing the drug before.

→ Ensures proper availability & affordability esp. Cancer drugs.

IV. Parallel imports → If a drug is provided at high cost, country can import drug from another country at lower cost.

→ ensures the affordability & reduces out of pocket expenditure.

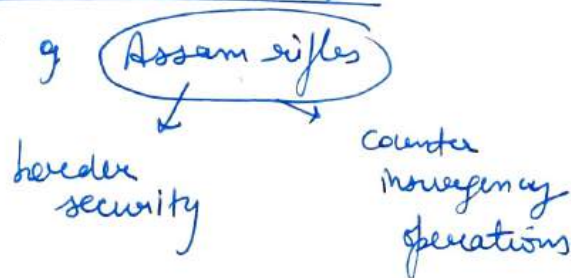
India's patent regime is well in line with inclusivity & ensuring public health as priority. (SDG-3)

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।

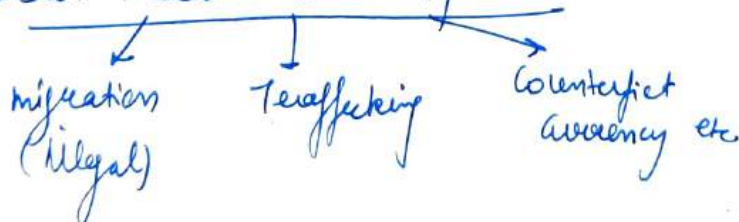
Mathur hadbole Committee recommended
the concept of ' one border - one force'
on Indian borders.

Arguments for :-

1. Dual nature of Indian forces



2. Specific & targeted training for various border related security threats.



3. Easy mobilisation of forces across borders
for upcoming threats of multifront damages.

Arguments against :-

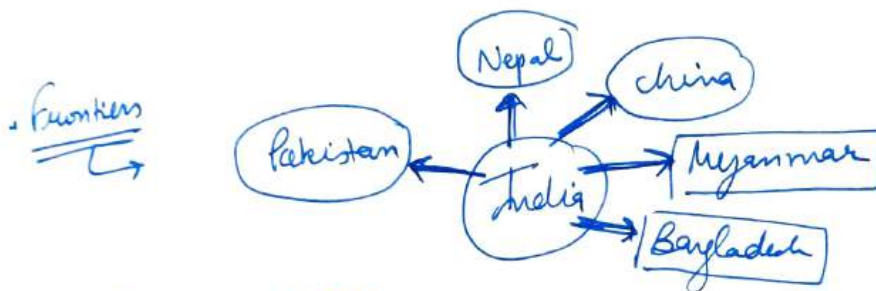
- 1.) Lack of human resources & training requirements
- 2.) Multiplicity of border threats need multiple forces with specific training
- 3.) Conflicts with combat roles & army
eg. BSF cannot be deployed in war with neighbouring country like China.

~~by~~

Indian borders face threat from every
frontline. Each border need to be
maintained specifically with further
deployment of "Integrated groups". "One border,
one security force can be inducted as trial
& then mainphased to all borders.

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।

There arises the need for new cadre of Indian frontier administrative service due to increasing security threats from all frontiers.



Need for new IFAS :-

1) Emerging threats from all corners

- Pak: Illegal smuggling, trafficking, counterfeit currency, Islamic insurgency (J&K)
- Bangladesh, Nepal: Cattle trafficking, migrant, illegal goods exchange, gangs menace
- Myanmar: Insurgency, illegal migrants, terroristic ideologies
- China: border disputes, attacks

2.) Piecemeal approach of Border security

→ No national integration

→ Confusion & delays in organisation.

3.) Multiplicity of forces →

BSF, Assam Rifles, CRPF, Army, etc.

Need effective co-ordination & regulation.

4.) Various deficiencies & insufficiencies →

The timely procurement of resources & delivery of services, posts, food, etc.

need to be ensured by unified administration.

3.) Conflict of interest between army & government.

An independent Executive can ensure peaceful & democratic flow of services.

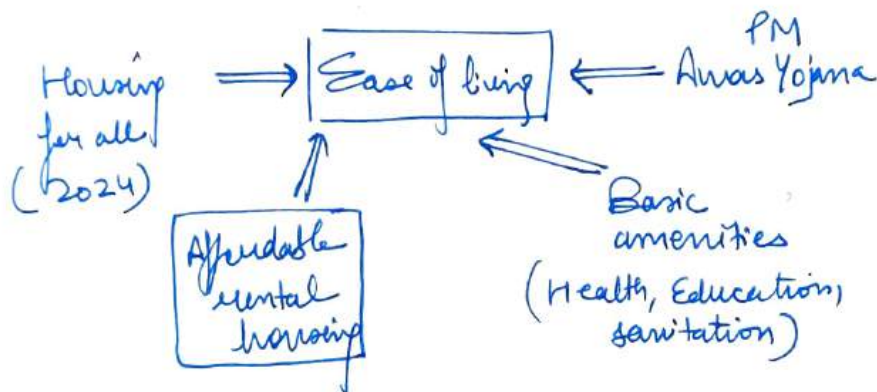
Hence the new Cadre of IFAS seems to be vital for effective maintenance of Indian frontiers in an administrative way.

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

केन्द्रीय 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 विश्लेषण कीजिए।

"Ease of living" has been highlighted in Union budget 2020-21 as one of the basic facility for healthy and sustainable livelihood.



Union Budget 2020-21 proposed affordable rental housing scheme for urban areas especially for India's migrant population.
(census 2011 = 450 million)

Its objective is to ensure housing for all by 2024 along lines of PM Awas yojana..

Benefits of Smart Cities →

1. Catering to need of migrants population
(Inch on move)

→ Covid-19 has highlighted the crisis of migration

2. Affordable housing for all groups.
(Especially to EWS, LIG, MIG, etc.)

3. Basic life amenities of health, sanitation, education, etc.

⇒ help in decreasing population in (slums).

4. Urban and Periurban accommodations

↓

Increase livelihood and employment opportunities

5. Opportunities for investment & growth
in infrastructure

6. Public Private Partnership.

Challenges →

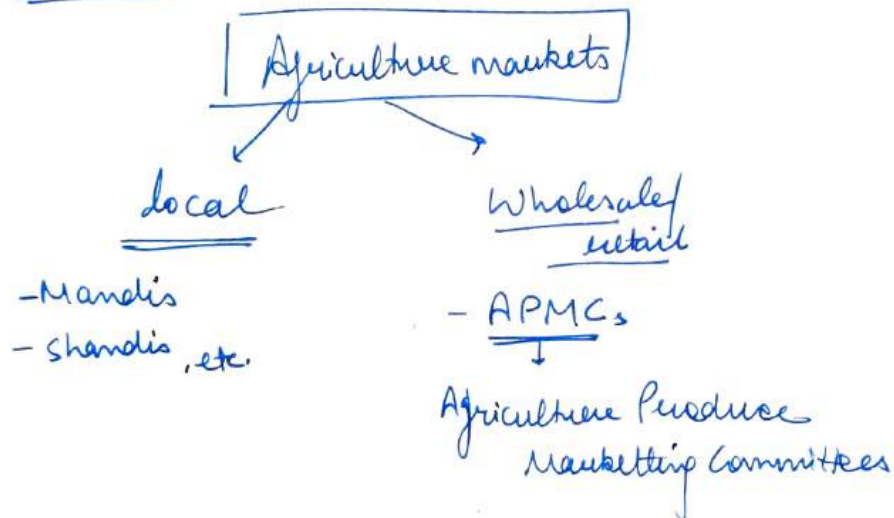
1. High Cost of land in urban centres → difficult for investors and builders to provide at affordable rates.
2. Most of the land of particular areas used from conversion of agriculture land.
3. Lack of private investor's interest in investing in lower returns project.
4. Delayed implementation & lack of funds.
5. Proliferation of slums in urban centres.

Budget 2020-21 ensured the inclusive approach towards accommodation by this framework. This can help in solving the migrant crisis and ensure their contribution in economic growth of 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 समाधान करने की आवश्यकता है। चर्चा कीजिए।

Agricultural marketing infrastructure have been suffering from severe bottlenecks. With various local & wholesale market reforms, new amendment act brings hope in improving agriculture marketing.
(>99000 crore lost in postharvests)



- New reforms in agricultural marketing ⇒

APMC act, 2020

1. Nationalisation of

1. Opening up of private sector in Agriculture market and procurement initiatives.

2. farmers can sell their produce to any wholesale and retail market outlet irrespective of state boundaries
3. E-NAM → for online procurement and sales for farmers produce.
4. Removing the stock limits under Essential Commodities act (except in certain conditions) → Can have cold chain infrastructure.
5. Establishment of procurement Centres facilities infrastructure like storage, washing, threshing, etc.

Yet, there remain several challenges like :-

- ① Monopolisation and corporatisation of agriculture market → Private sector might not provide the desired cost for produce.
- ② Doubts about removal of MSP :-
MSP is not statutory obligation of government.

- ③. Bihar brought similar reforms of APMCs and failed.
- ④. States might have to abolish Mandis tax to provide Competitiveness for private sector (decrease in revenue)
- ⑤. More inequalities among farmers
- ⑥. Might lead to monocultures and decreased soil fertility & yield.

Way forward →

Government has assured of not removing MSP, yet reforms need to be regulated to prevent such corporatisation.

- Gradual introduction of reforms
- assurance of MSP
- state-wise introduction
- Ensure infrastructure like cold chain to prevent losses.

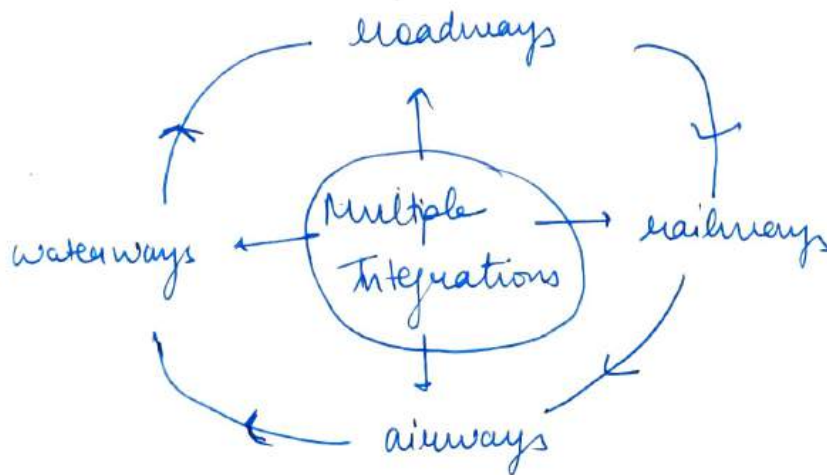
Farmers are the guardians of food security of India. Their interest need to be addressed.

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 माध्यमों के मध्य विविध रूप से एकीकरण की आवश्यकता है। पुष्टि कीजिए। भारत के लिए बहुविध परिवहन में जुड़ी चुनौतियां और अवसर क्या हैं?

Multimodal transport refers to utilisation of various modes like roadways, railways, waterways, etc. for supply and distribution of products or transportation

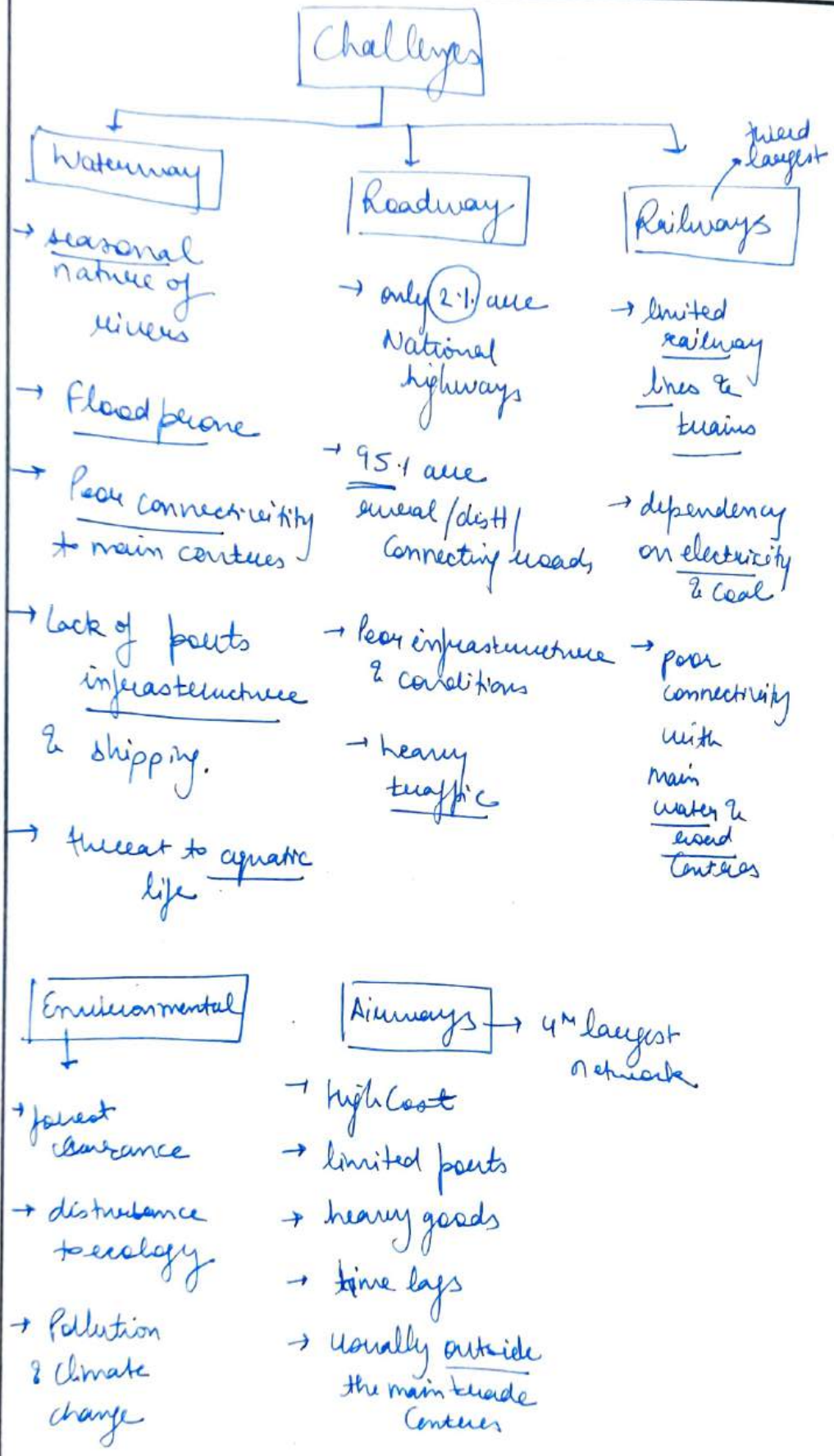
eg. Kaladahan Multimodal project



Multiple integrations required are :-

- (a) Various ports development and stations for handling.
- (b) separate outlets for rapid movement
- (c) specific corridors and vehicles

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 (if other) a
 marks are there



Opportunities →

1. With new construction of National inland waterways, there is high potential to connect it with other modes.
2. Better transport, less delays and more connectivities.
3. Decrease export turn around time.
4. Decrease cost of product.
5. Railway corridors along with road lanes can help in midway transfer of goods.
6. Special Economic zones can be linked to nearby multimodal project.

Way forwards → Can be more harnessed by

- 1) Interlinking of rivers
- 2) Special & dedicated freight corridors
- 3) Specific road corridors connecting the other modes.

Multimodal project will also bring international connectivity of Kaladan project.

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 क्षेत्रक और संबद्ध श्रम बल की सुभेद्यता 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।

Informal sector in India for 79% of workforce, contributing 75% of GVA. The pandemic COVID-19 has further exposed the vulnerability.

Acc. to ILO, 400 million informal workforce will be pushed to poverty.

Impact of COVID-19 Pandemic →

I. Exposed vulnerability of informal sector :-

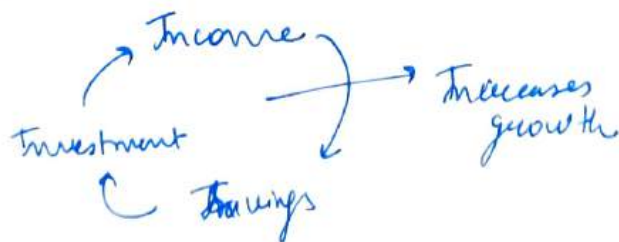
- Uncertainty and decreased investments
- Job loss and unemployment.

↓
Increased to ~25% in pandemic

- c) Retrenchment of labour
- d) Migrant Crisis and reverse migration
- e) Health insecurity and increased Expenditure (out-of-pocket is >60%)
- f) Dilution of labour laws & Exposed exploitations
- g) More effect on Women
 ↓
 Increased cases of domestic violence
- h) disturbed forward and backward linkages.

II. Opportunity to balance formal-informal economy dynamics :-

- a) Health sector and increased need for investment ⇒



b) Formalisation :-

- 1) Protecting the workforce especially at the edge of informalisation
- 2) Schemes like EPP, Pension scheme, labour code bills, etc.
- 3) Rationalisation of GST and subsidies.
- 4) Providing opportunities in villages and rural areas (Reverse migration)
 - ↳ eg. Hand sanitizers
Mask making
Food processing } → Registration
(online portals)

c) Registration & recognition of workforce
(eg. SWADES)

d) Skilling & upskilling initiatives of unskilled informal workforce
eg. Life-MGNREGA
Skill India

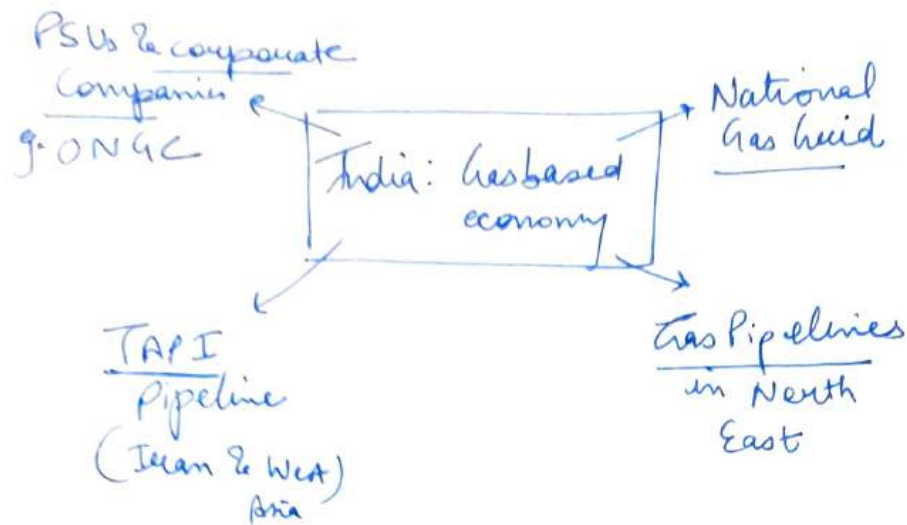
COVID-19 should be considered as box of opportunities to plug the loopholes & keep moving on path of \$5 trillion economy.

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 मामना की जाने वाली चुनौतियों को रेखांकित कीजिए। इस संबंध में हाल ही में सरकार द्वारा उठाए गए कदमों का उल्लेख कीजिए।

India's requirement of energy consumption is one of the highest in the world. India aspires to become gas based economy by utilisation of huge resource potentials.

- Drivers →
- Transport + domestic purposes
 - 1. Huge consumption demand
 - 2. Better infrastructure and supply chain management
 - 3. low cost option and cleaner fuel.
 - 4. Increased investment in infrastructure
of National gas grid
 - 5. opportunity for better connectivity with North East
 - 6. Income increased and economic growth
 - 7. Growth & Export potential



Challenges

1. limited resources, might lead to overexploitation.
2. Pollution & climate change
3. Leakage and disasters
4. Inclusivity and reachability
← to poor.
5. Connectivity to a national grid.
6. Huge Cost & infrastructure
7. Ensuring both transport & domestic purposes

gas pipeline in each household

Recent steps by govt :-

1. NE gas pipeline → PPP model with private firms and PSUs.
2. Lower GST and gas rates
3. Connecting the needs for transport and domestic purposes to common grid.
4. NITI Aayog framework
5. International Collaborations
eg. TAPI pipeline
6. Budgetary allocations for infrastructure
& funding.

India's aspirations for gas based economy can bring further investment in linked industries like fertilisers, etc.

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

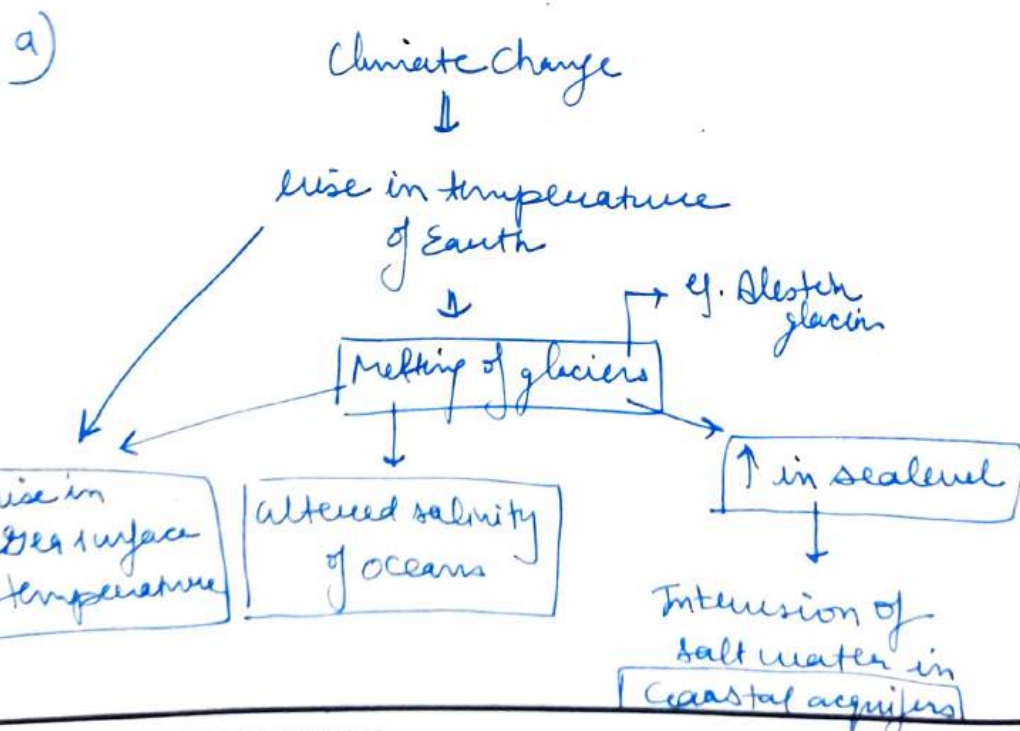
जलवायु परिवर्तन और संबद्ध घटनाएं तटीय जनसंख्या की सुभेद्यता को बढ़ाते हुए समुद्री एवं तटीय पारिस्थितिक तंत्रों को खतरे में डालती हैं। परीक्षण कीजिए।

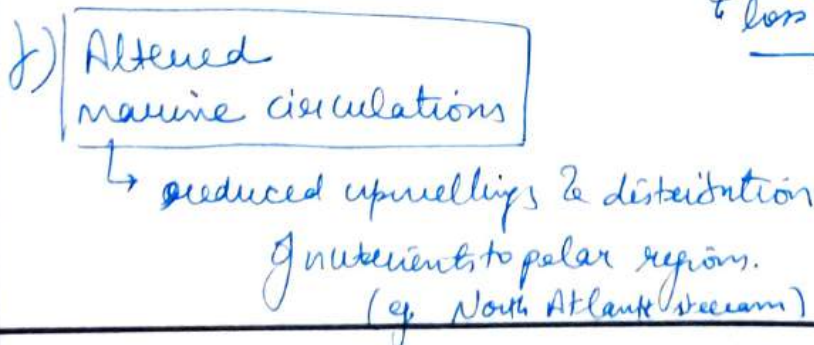
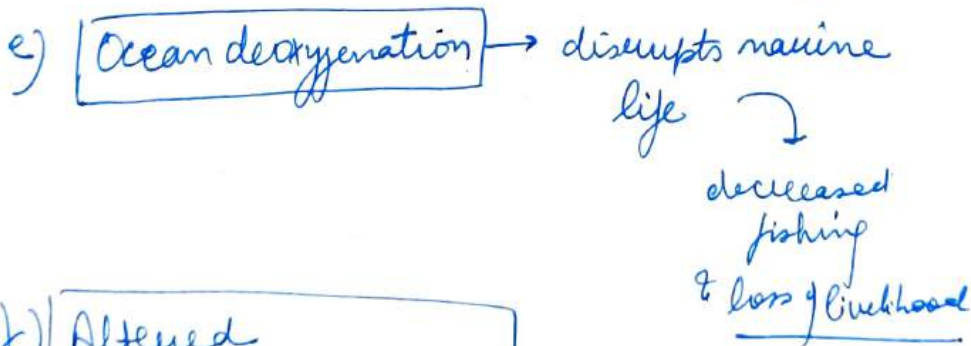
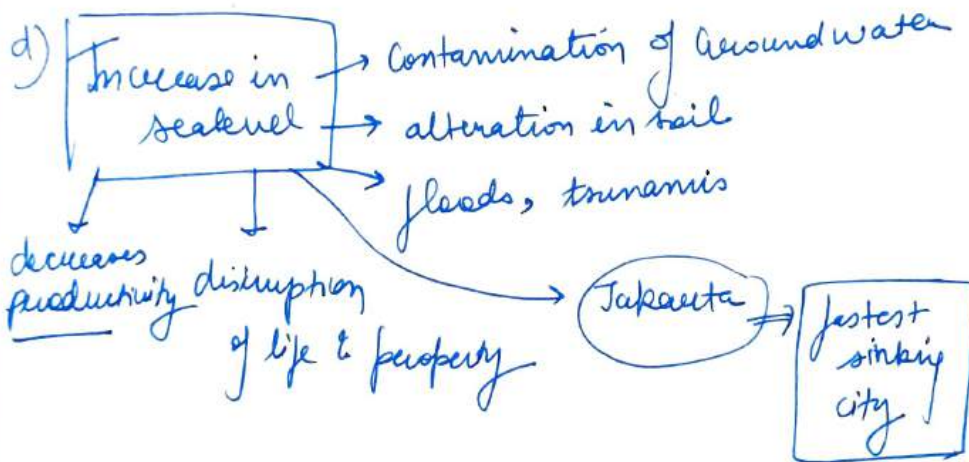
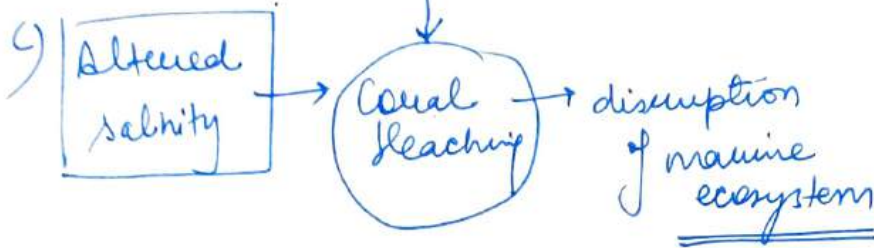
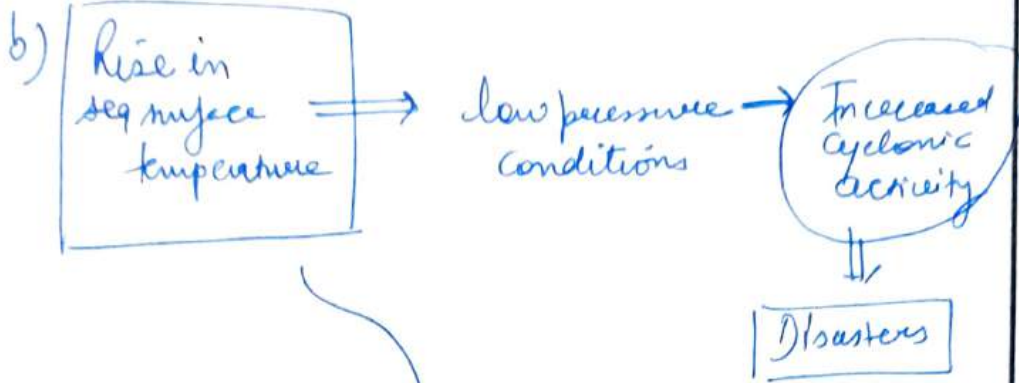
IPCC 2015 report highlighted that

"climate change is seal and human factors are the main cause".

Such changes have endangered the marine and coastal ecosystems due to various factors :-

I. Endanger marine & Coastal ecosystems →





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II. Increased vulnerability of Coastal population :-

a) loss of life, property and livelihood

↓
disaster prone

↓
decreased fishing

b) Decreased soil productivity and yield.
(food insecurity)

c) More displacements due to climate change
 (India = 2.8 million; one of highest)

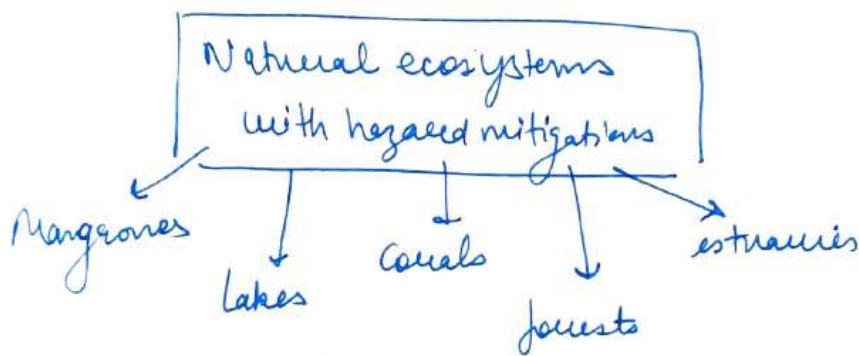
d) Water Crisis and scarcities.

Climate change effect on marine ecosystem
 not only threaten oceanic life but interlinked
terrestrial ecosystem. International
collaboration like Paris agreement need to
face up to join hands towards common
solutions.

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 किम प्रकार अलग-अलग संकट के शमन का कार्य करते हैं।

Nature has the best known ways to prevent the effects of natural disasters. Anthropocene which tends to alter this natural ecosystem suffers the most of the aftermath.

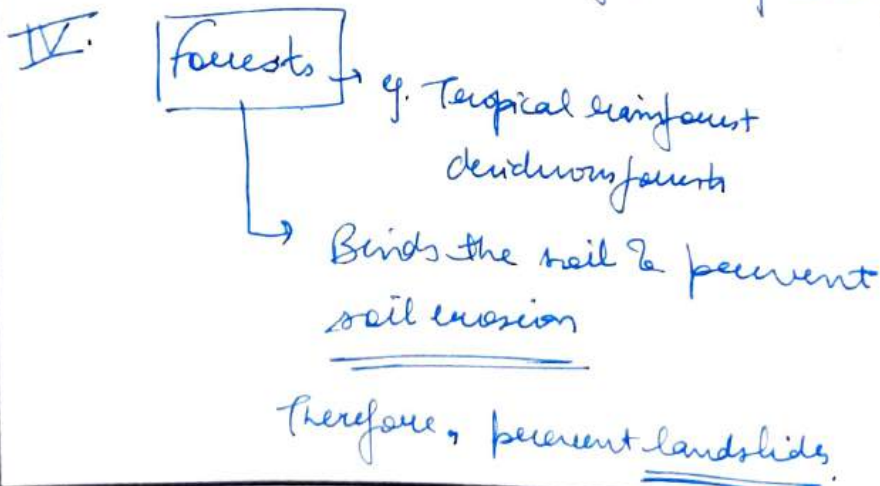
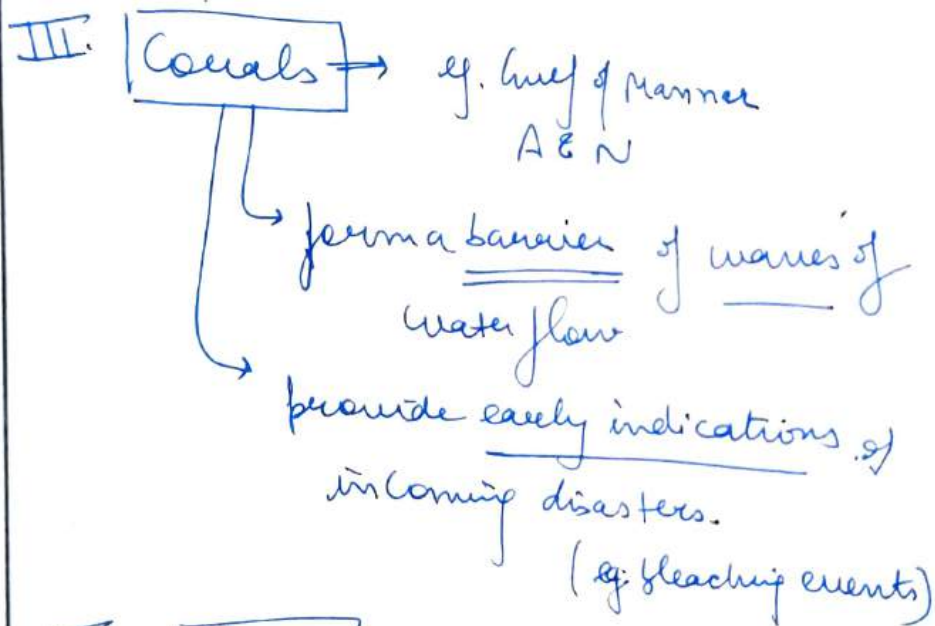
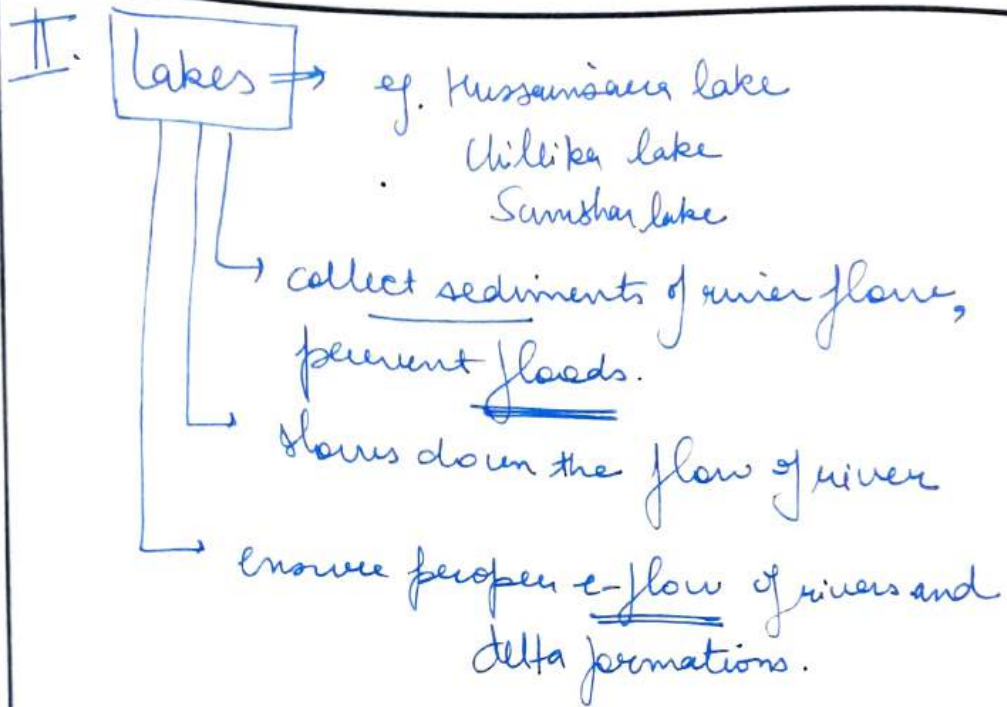


I. Mangroves → eg. Sunderbans in West Bengal

→ Bind strongly to soil via thick stilt roots & prop roots

→ Prevent the effects of oceanic disasters like tsunami, cyclones to some extent

→ Prevent erosion of soil and movement of strong winds.



- Acts as barrier for strong wind flows around coastal region
- Recurrent desertification of soil or soil liquifactions due to Earthquakes.
- release O_2 and fresh air.

V. Estuaries → eg. Narmada, Tapi, etc

- Recurrent severe effects of tsunami of oceanic storms.
- slows down the harsh waves due to sediment collection & river flows.

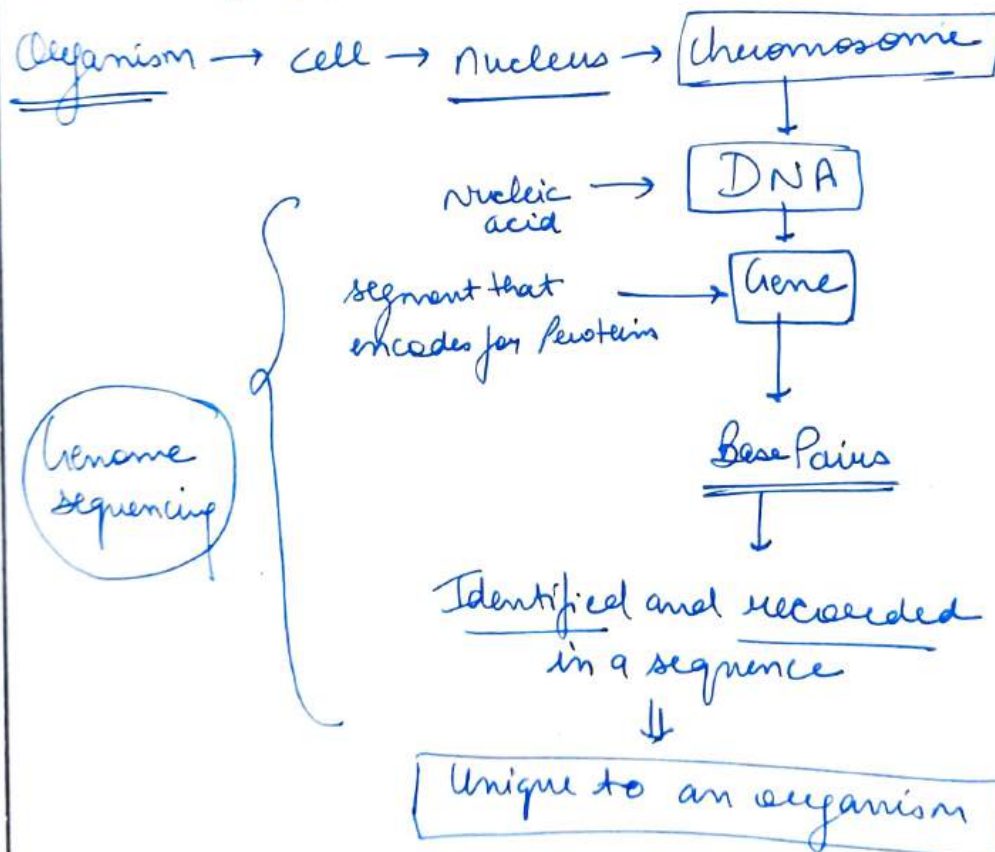
Such hazard mitigation functions highlight the importance of nature and its elements for existence of human life on Earth.

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

ब्याख्या 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 इंडिजेन (IndiGen) परियोजना पर कुछ प्रकाश डालिए।

Genome sequencing refers to decoding and encoding the sequence of a genome of an organism and storing it on enabled computer devices.

e.g. Human genome project



Challenges in Genome sequencing:

1. Huge Cost and infrastructure requirements

g. Millions of dollars invested
in Human genome project

2. Cyber threats to security challenges ⇒

→ Can be misused for various purposes

3. Huge amount of data and storage challenges ⇒

→ Special computers and software
need to be created.

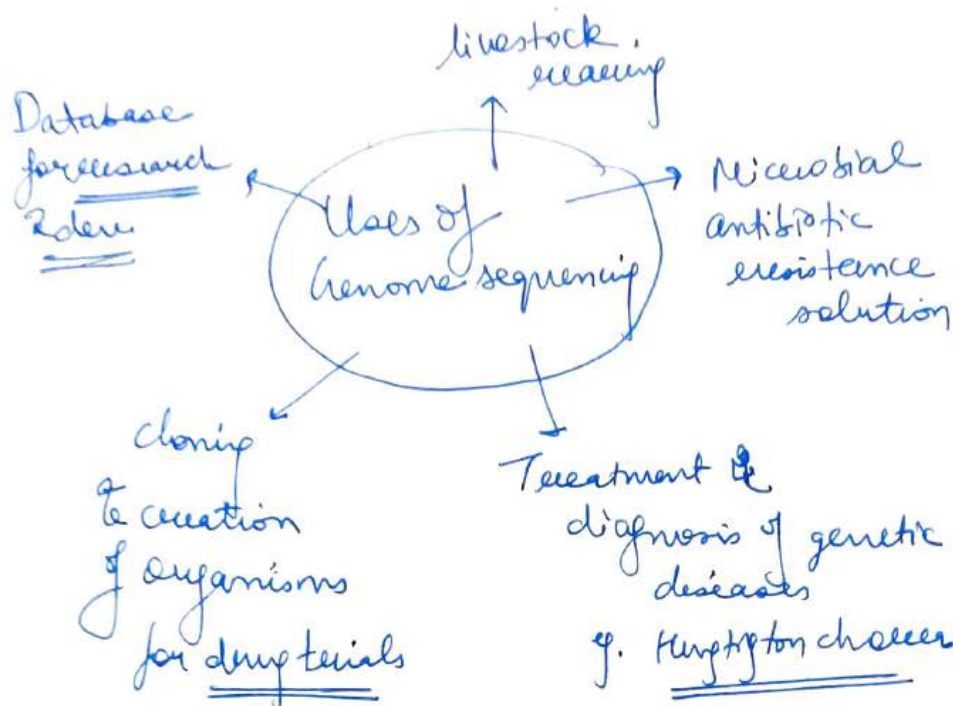
4. Ethical challenges →

→ Consent to usage of data along with
ensuring the proper use in research
to development.

5. Impediments and concerns about usage ⇒

→ Misuse to create clones & robotic
interactions. (Abreeding)

→ Can be a threat to human race.
(eg. designer babies in china)



Indigen Project → has been recently launched for India's own genome sequencing project.

Starting with few hundreds of individuals as database, It aims to form its own resource of information keeping in mind the variabilities & diversity of India.

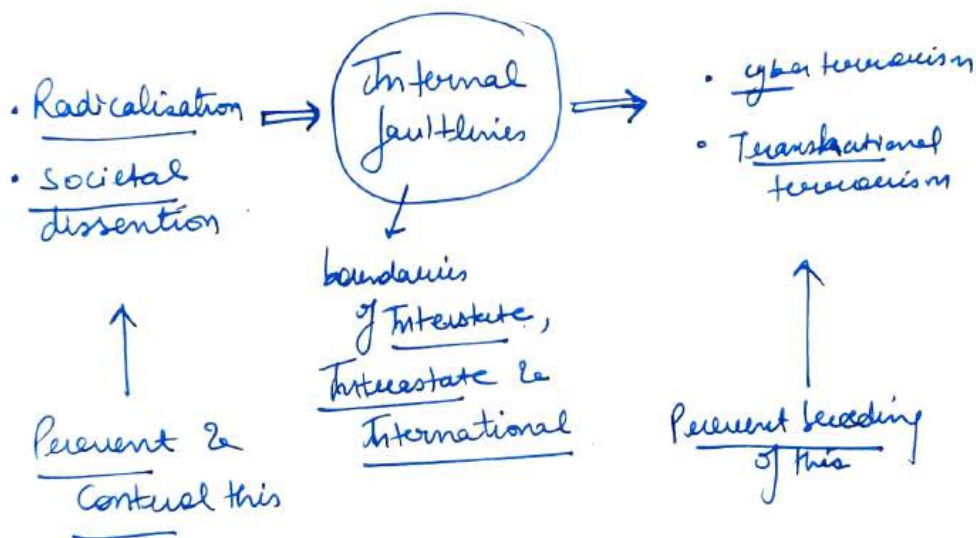
Genome sequencing opens a panorama box of opportunities down the lane of researches but poses certain threat that need to be addressed.

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 दरारें साइबर एवं पार-राष्ट्रीय आतंकवाद का जनन स्थल होती हैं। चर्चा कीजिए।

There has been increased instances of radicalisation and societal dissention in India.

They poses great security threat for India's integrity & sovereignty.



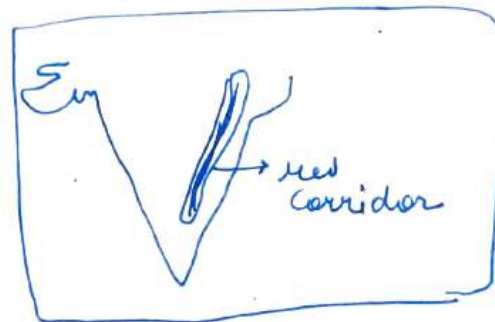
How Internal faultlines breeds terrorism :-

- 1) Radicalisation → The extreme ideology of thoughts & deeds to bring change or not to bring any dynamism in society.
eg. Terrorist groups. → Hizbul Mujahideen

2.) Societal dissention → The nonfulfillment
of societies aspirations & their rebel
against institutions of states.

eg. Red corridor - left extremism

↓
denial of land rights &
development
↓
rebel & revolution
in a extremist way



3.) Lack of inclusiveness → Neglect of
a section of population.

4.) A spark of terrorism
↓ eg. illegal migrants
Rapid spread
in such scenarios

5.) Modern warfare of cyber threats to
security

eg. Kundankulam attack on nuclear plant
 ↓ by cyberattack

huge protests against
its establishment ← inquiry?

Need for inclusive & immediate response ⇒ by,

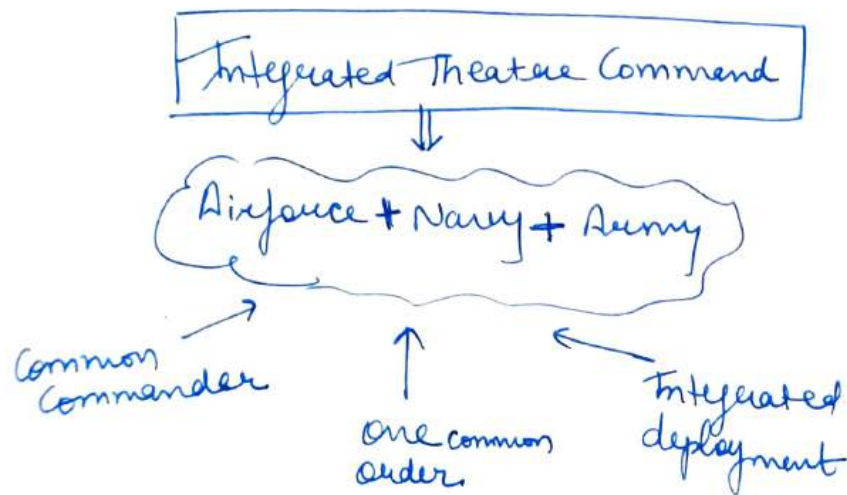
- a) Control early stage infiltrations
- b) Prevent search to explosives & materials
- c) Ensure inclusive development, equal interests of all.
- d) De-radicalisation camps & rehabilitations
- e) Plug the porous borders.
 eg. India - Myanmar
- f) Special task force with targeted response.

The extremist tendencies & radicalistic behaviours have a stunt. If stopped then & there, can prevent huge destructions of life & property.

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।

Integrated Theatre Command has been implemented in many countries like USA, China, etc. The institution of chief of defence staff in India has opened the debate of its utilisation in Indian scenarios.



Need for Integrated theatre Command :-

1. Emerging security challenges :-

- a) Multifront war (Pakistan & China)
- b) Open & porous borders (Smart fencing)
(e.g. Bangladesh, Myanmar, etc.)
- c) Nuclear era → Threat of Nuclear
strike while India's No first use policy.

2. Co-ordinated & rapid mobilisation →
With combination of air, water & ~~sea~~
ball attack requires.

3. Other countries also possess such
advanced command system.
e.g. China

4. Less confusion & conflicts ⇒ A common
commander prevent the confusion in
deployment & responses

5. Multiple fronts → Every border needs
all the 3 types of forces due to unique
geographical location of India.

6. Increased threat of cybercrimes &
modern warfare

Challenges & Issues →

1. Concentration of power in one commander of military.
(out of Civilian Controls)
2. Army superiority might bring conflicts over other 2 forces.
3. "One size does not fit all": if it works for China does not mean it will work for India.
4. Lack of effective resources & infrastructure.

The Theatre Command system can be introduced in India over trial for some issues & then mainphased over a period of time after regular periodic evaluation.