



VISION IAS

www.visionias.in

GENERAL STUDIES (TEST CODE : 1524)

Name of Candidate	Suryanshu Choudhary		
Medium Eng./Hindi	English	Registration Number	564612
Center	Jaipur	Date	23/12/20

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।

16-B, 2nd Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar
Delhi- 110009

EVALUATION INDICATORS

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

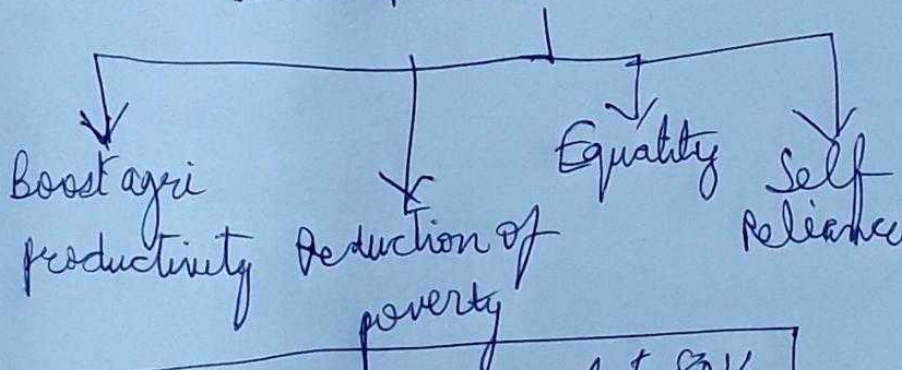
Overall Macro Comments / feedback / suggestions on Answer Booklet:

1. 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

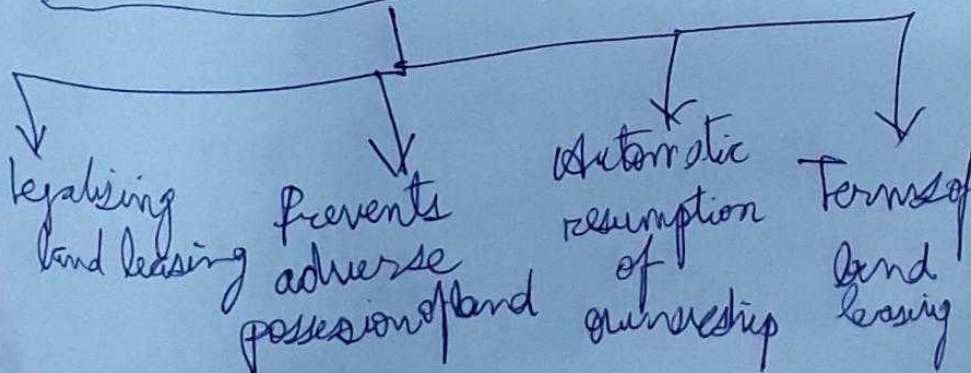
भारतीय कृषि क्षेत्र को बढ़ावा देने के लिए काश्तकारी सुधारों की अत्यंत आवश्यकता है। टिप्पणी कीजिए। इस संदर्भ में, मॉडल भूमि पट्टा अधिनियम, 2016 के महत्व की भी विवेचना कीजिए।

Tenancy reforms are responsible for protection of rights of both landlord & tenants for maintaining a cordial relation between them. They are much needed to boost productivity in India where 86% farmers are small & marginal.

Benefits of Tenancy reforms



§ Land Model Leasing Act 2016



Significance

1) The act provides terms of land leasing by means of specific contract to promote rule based behaviour & increase investment

2) It provides social security to tenants by means of regulation of rent & adverse possession to ensure their rights remain safe & landlord can't encroach them & vice versa.

3) Automatic resumption of ownership provides timelines for increasing agricultural efficiency by investment via inputs like seeds, fertilisers etc.

4) It provides means for occupational diversification as work hours are limited by contract & hence tenants can utilise remaining time for other works.

Dahvi committee report envisages a target of doubling farmers income by 2022 & land leasing & tenancy reforms will ensure its achievement

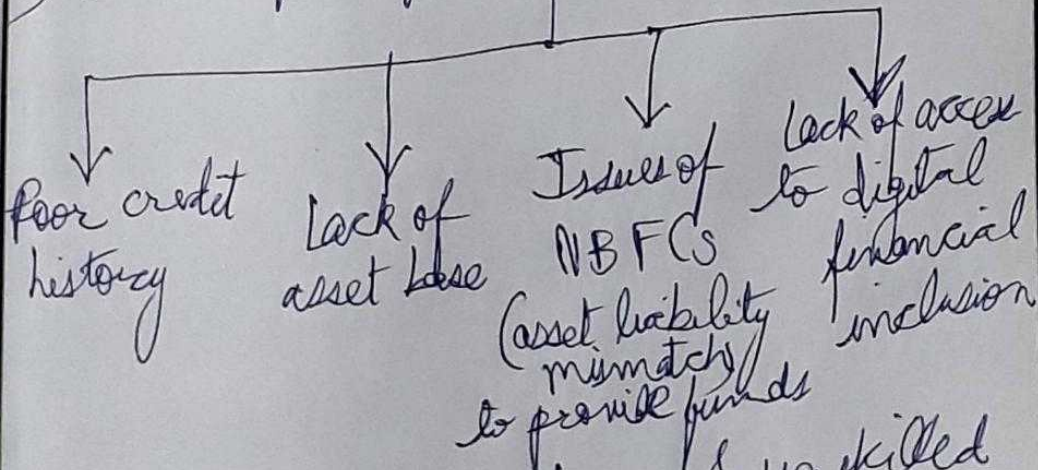
2. Identify the various challenges that have restricted the entry of Indian MSMEs into the foreign market. Also mention some government initiatives that have been taken to facilitate MSME exports. (150 words) 10

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 form the backbone of Indian economy and account of 29% of India's GDP & 45% of exports. Still they face some issues in accessing foreign market

Issues faced by MSMEs

1) Lack of capital base



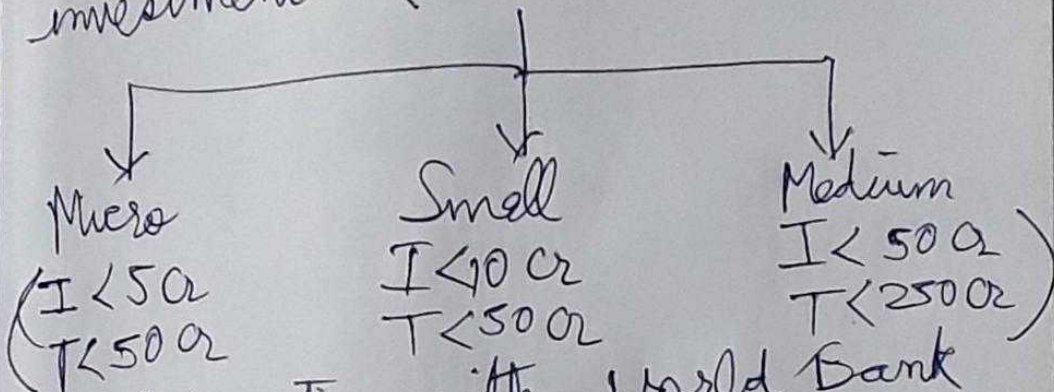
2) Poor technology base & unskilled labour prohibits enhancement in productivity to access foreign markets.

3) High logistic cost & low availability of marketing opportunities to informal sector hinders access to foreign markets.

A) Poor managerial avenues & lack of social security to workers.

Initiatives by govt

1) Categorization of MSMEs based on investment & turnover



2) Collaborating with World Bank to provide \$ 750 mn capital base for access to finance.

3) TREDS^{AGPM} portal to ensure procurement of MSME products & marketing of same

4) Natmanikhar Bhurat abhiyan to promote decentralized foodism & supply chain for MSMEs

5) 59 mn loan portal for easy access to finance in < 59 min

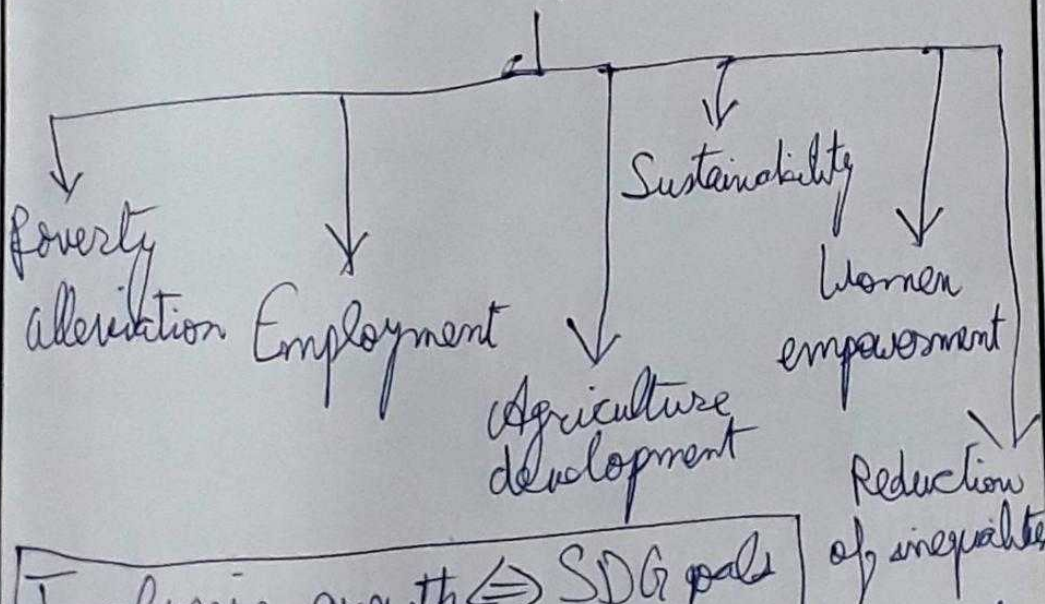
6) Subsidies for machines & skilling via PMKVY
MSMEs are crucial in achievement of \$1 trillion economy by 2025 & hence should be integrated with the global supply chain for the same.

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।

Inclusive growth refers to proper growth where poor people act as both beneficiaries & participants in growth process. Its achievements along with SDG goals are crucial for rise of Indian economy.

Facets of Inclusive growth



Inclusive growth \Rightarrow SDG goals

Inclusive growth focuses on poverty alleviation by means of anti poverty programmes like MGNREGA & PMJDY which will help in income security & achievement of SDG 1 by 2030.

2) Provision of schemes like ONRC & NNM to ensure food & nutritional security to people for better health prospects for SDG 2. Similarly Ayushman Bharat & NHP.

3) Inclusive growth seeks to reduce gender discrimination & hence by schemes like Beti Bachao Beti Padhao & Surashikha Yojana we ensure better health & educational prospect for women.

Education prospects to ensure better employment for all are necessary for achievement of SDG 4. Hence by schemes like RTE, MDM & New Education Policy, we seek to achieve inclusivity in education.

Inclusive growth also focuses on sustainability & hence our constant endeavour for promotion of circular economy & use of electric vehicles (NeMMP) is an endeavour of its achievement. Inclusive growth is of utmost importance to be \$1tn economy by 2025 & achievement of SDG goals by 2030.

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 refer to the rules that specify nationality & content of imported products to deal with the issues of dumping & quality. They are of utmost importance in today's world.

Need for evolution of ROO

1) To levy anti dumping duties & apply preferential rates at product based on their nationality & content.

2) To facilitate govt procurement of better quality products to ensure economic efficiency.

3) To prevent cases of dumping by countries like China to keep in check increasing trade deficit (\$50 bn).

4) To maintain trade statistics to ensure documentation of imported products.

5) To specify labelling of products for their better use.

Steps taken by India

1) CAROTAR rules to specify the content & origin of products to prevent round tripping & dumping.

2) Public Procurement Order Amendment Act 2019 to ensure check on foreign companies' products by means of certification & constant check on shipments worth > 10000

3) Specifying RDO & maintaining databases by segregation of companies based on application of normal & preferential duty structures.

Quality products are of immense importance in promotion of economic efficiency & growth & hence rules of origin ensure that in the long run.

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 regime was established to provide income security to farmers in case of crisis but today its relevance has changed a lot in era of surplus production.

MSP regime should be maintained

1) 86% of farmers are small & marginal farmers that need income support to sustain production

2) Neglect of rural markets & exploitation by intermediaries (as in case of APMC) demands MSP to be paid to farmers.

3) Declining soil fertility & non availability of mechanization is an are responsible for decreasing productivity in rainfed areas thus need for MSP

Relevance in era of surplus production

At the same time, due to availability of better seeds & fertilizers via Green Revolution (HYV) MSP demands a change especially for rich farmers.

MSP has led to wastage of resources & crop intensification (water by rice) leading to issues of distorted cropping pattern & water pollution.

MSP subsidies create issues of huge fiscal burden (fiscal deficit) on govt, leading to crowding out of private investments because of higher borrowing.

Contract farming introduction in many areas has led to better prices than MSP leading to decreased relevance.

Maintaining balance

Directing MSP for SM farmers
Betterment of APMC markets (as per Agri Producer Law)

Better linkages MSP for all crops (millet)

Policy on MSP should be part of Swaminathan Commission recommendation (C2F) to double income by 2022.

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।

Locusts are grasshoppers that can leave a damaging impact on environment. The recent case of worst locust attack in last 25 years is a testimony of the linkage with climate change.

Linkage between locust attack & climate change

- 1) Locust attack ~~was~~ began due to favourable weather conditions in Horn of Africa which was a result of climate change.
- 2) Excessive warming of Arabian Sea due to absence of wind shear & prevention of water mixing (high temp) led to +ve IOD, favouring locust attack.
- 3) Wind movement is a passive way of carrying locusts which has changed in past times due to issues of black

Carbon creating pressure differences in Indian Ocean (albedo feedback), leading to westward movement of locusts.

4) Intensification of cyclones (like Amphan in Bay of Bengal) due to rising temperatures & increased coastal vulnerability (deoxygenation & acidification) favoured locust attack.

5) Ecological degradation due to land desertification compels locusts to search for food leading to locust attack.

6) Sea level rise favours presence of locusts which has happened due to extensive saltwater intrusion & ocean warming & acidification.

Ways like artificial sprays & biopesticides can be helped in controlling locust attacks but achieving climate sustainability (SDG goal by 2030) is the prime factor for its control.

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 refers to the carbon structures where at least 1 dimension is in the range of nanometres ($\sim 100\text{nm}$). They have a widespread range of properties & applications.

Properties of Carbon Nanotubes

- 1) Physical properties \rightarrow They are the best conductors of heat & electricity (like graphene) along with low weight.
- 2) Chemical \rightarrow They can react with various elements & can also act as catalysts for several reactions.
- 3) Allotropism is shown by Carbon Nanotubes as they change forms.
- 4) Optical properties \rightarrow They behave as translucent to incoming light which also has many benefits.

Applications of CNTs

- 1) Medical → CNTs are widely used for targeted drug delivery & applied (like nanopatches & dendrimers) & applying incisions & maintaining drug concentrations.
 - 2) Help in energy storage in various batteries to achieve high energy density.
 - 3) They are widely used in touchscreen phones due to their flexibility.
 - 4) Use in photovoltaic cells due to high electrical & thermal conductivity.
 - 5) Used for making nanorobots, which can have defence applications of surveillance, reconnaissance & mapping of border terrains.
 - 6) They are used in place of aluminium foil to maintain heat of stored food.
- Carbon Nanotubes are the next revolution in history of science & India looks to maximise their use proachingly better results.

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 domestic patent regime has a reef relationship of conflict, containment & cooperation between public health & pharmaceutical industry's interests.

Privileging public health over pharma

1) TRIPS flexibilities have been incorporated in India's patent regime to provide for the same.

2) Compulsory Licensing mechanism permits production of patented drugs of pharma industry by govt. without permission of patent holder.

3) Parallel importation allows import of certain drugs & devices for public health with or without permission of patent holder.

4) Commercialization ^{part} of IPR policy 2016 is liable for restrictions on basis of public health privilege over pharma industry patents.

5) Need of developing countries (as LDCs mentioned in Doha Agreement of WTO) allows India's domestic patent regime to have an upper hand.

Use of patents by pharma for personal benefit leading to skyrocketing prices.

Equality of both

1) New initiatives like CIPAM & LPRO (by DPIIT & Qualcomm) allows better patent usage by pharma industry to maintain better relations.

2) IPR policy 2016 needs a revamp to ensure better protection of pharma industries.

India has 7th largest no. of patents being filed (as per WIPO) and hence should focus on establishing a better regime for pharma industry.

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।

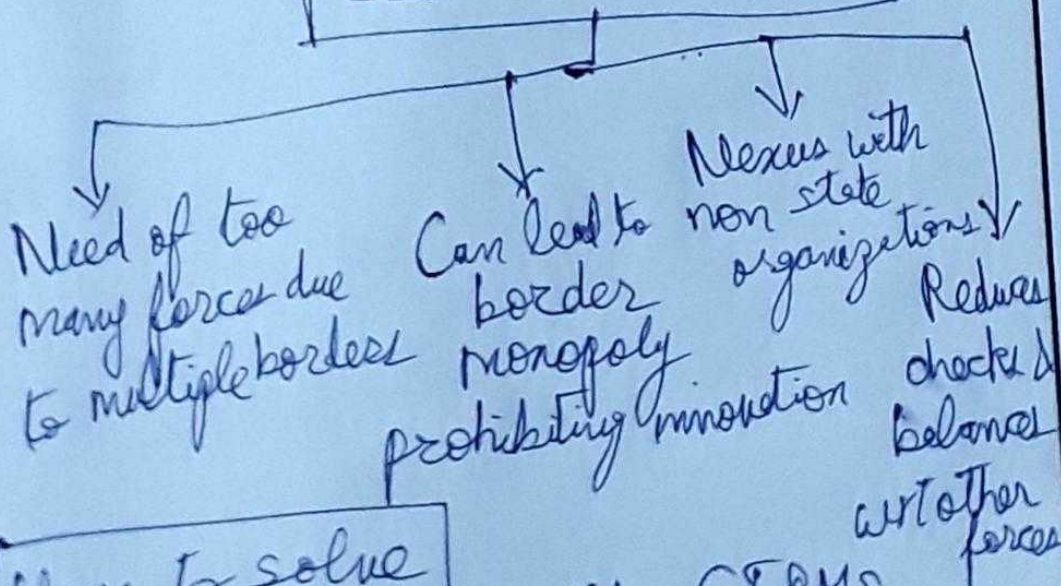
India's border management concern needs a major revamp to ensure better political sovereignty & territorial integrity. The principle of 'one border one force' is in coherence with it.

Arguments for one border one force

- 1) Clear chain of command to maintain peace across border (as BSF in Pakistan) for better border management.
- 2) One force will be effectively able to use its expertise & rely on technology (like CIBMS in Bangladesh) for better results.
- 3) Prevents issues of lack of coordination across multiple borders (like Assam Rifles at China & Myanmar) thus decreasing work load & better social security to soldiers.

- 4) It will lead to better interaction with locals to promote cohesive border management.
- 5) Better border infrastructure development (like by BRO) to achieve strategic mobility across border.
- 6) Better control of issues of insurgency & tackling of money laundering & trafficking

Issues with OBOF



Ways to solve

- 1) Use of technology like CIBMS to promote state of art surveillance
 - 2) Use of ITCs to establish coherence b/w forces for better border management
- India's security at borders is of a prime concern & concept of OBOF should work in coherence to achieve that.

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 are growing demands for creation of Indian Frontier Administrative Service to perform vital activities at Indian frontiers. It comes with its own set of opportunities & challenges.

Opp [Need for IFAS]

- 1) Lack of manpower at Indian frontiers to deal with issues like cross border trafficking & laundering.
- 2) Multiple units guarding various frontiers has led to confusion in establishing a chain of command.
- 3) Adherence to technology is at low levels which can be solved by expertise provided by IFAS.
- 4) IFAS will be able to cohesively

involve locals for holistic development

5) International experience (like China & US) having a 'separate Frontier Service Cadre demands the same.

No need of IFAS

1) No another layer of bureaucracy will be added which can increase issues of corruption & red tapism

2) Financial pressure on govt. to open up a new service & train the cadre.

3) Current frontier forces are well versed with challenges & newly recruited IFAS officers might not have a true picture of ground reality

4) Geographical expanse of India is not much.

The above issues can be solved by better frontier practices (border management by CIBMS & international coordination (like Djibouti Code of Conduct) to cater to issues of frontier

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 विश्लेषण कीजिए।

Union Budget 2020-21 is a revolutionary step in promotion of 'Ease of Living' to all citizens for achievable sustainable development. The proposed framework is necessary for achievement of this objective.

Framework proposed

1) Better income security to citizens by terms of relaxation in Personal Income Tax to promote income security

2) Better Abolition of DDT to achieve better ~~use~~ resource usage by companies for India's corporate growth.

3) Subsidies given on schemes like PMAY & new schemes like ARMC &

NLMC to promote land usage.

4) Setting up of more Smart Cities to promote better infrastructure & social facilities to citizens.

5) National Infrastructure Pipeline (worth ₹ 102 L cr by 2025) for achievement of \$ 1 Tr economy by 2025.

6) Doubling of credit limit of deyushman Bharat & inclusion of new categories (like startups) under PSL to promote better credit to health & education sectors.

[Analysis of this framework]

1) Tax relaxations will help in increasing income security to citizens coupled with increase in tax to GDP ratio & tax buoyancy.

2) New concepts like ARHCs & NLMC will help in utilization of excess land lying vacant with govt.

3) This will help in better land marketability & foster entrepreneurship in land market to solve issues of housing (under PMAY to provide 1.2 cr houses by 2011)

4) Establishment of more smart cities will lead to better renewal & retrofitting. This will also provide better waste management, sanitation, mobility (e-vehicles) facilities to facilitate ease of living

5) Increase in budget of SBA (₹1.4L) & inclusion of solid (plastic & cardboard) & liquid (greywater) waste management to promote sanitation

6) NIP will help provide better infra & connectivity to markets that will help raise production levels to achieve income security.

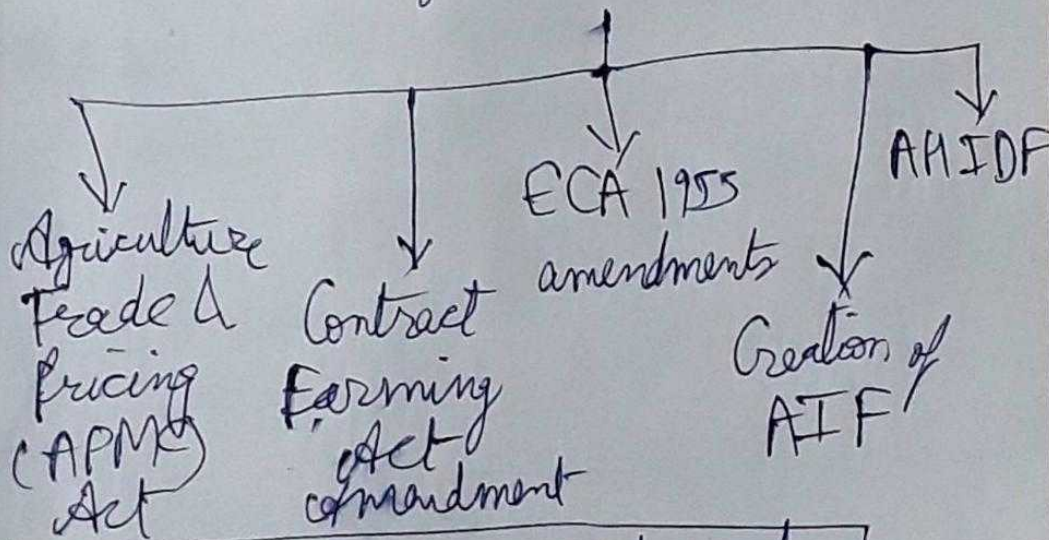
India poses to be \$1 Trn economy by 2025 & global superpower by 2030 & 'New India' document is in coherence with same.

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 refers to the activities necessary for reach of agricultural products from producers to consumers. It comes with its own sets of challenges to fully realise benefits of recent reforms.

Recent reforms in agri marketing



Challenge to be addressed

Low levels of mechanization productivity has created supply bottlenecks to achieve better results.

- 2) Low mechanization level & high cost of logistic further hamper spirit of these reforms.
- 3) Neglect of rural markets & exploitation by intermediaries (as in case of APMC) further aggravates the situation
- 4) Infrastructural bottleneck, in terms of non existing cold chains, MFPs & supply infrastructure leads to food wastage which should be addressed.
- 5) Lack of warehousing facilities & testing & packaging facilities
- 6) Corruption in APMCs by officials & contractors & cartelization of traders.

How to utilise present reforms

- 1) APMC Act amendment needs to be replicated in both trade areas & APMC mandis to achieve parity.
- 2) Strengthening of eNAM priority

across all markets to achieve transparent auction & marketing facilities;

3) Contract farming amendment should be implemented cohesively with MSP regime to remove fear of MSP removal & ensure better price regime.

4) ECA 1955 amend

4) Also Contract farming amendment should specify written contracts along with price mention & better dispute resolution facilities

5) ECA amendments should try to stick to given products only during crisis times to prevent hoarding & black marketing.

6) Creation of AIF will ensure implementation of post harvest infrastructure & preserving community assets.

Dalwai committee report recommends doubling of farmer income by 2022 & better agri marketing reforms (like Operation Green & PMKSY) will help in its achievement

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 से जुड़ी चुनौतियां और अवसर क्या हैं?

Multimodal transport refers to integration of various modes of transport (like land, sea & air) to achieve cost efficiency & economic growth. It also has its own set of challenges & opportunities.

Multimodal transport

1) Multimodal transport combines achieving both last mile connectivity along with faster turnaround time & cost efficiency.

2) It integrates various transport modes to access various nodes based on individual efficiency parameters based on geographical terrain.

Challenges of multimodal transport

- 1) Major transport activities occur across roads due to last mile connectivity but the
- 2) High logistics cost in road transportation as compared to railways & waterways.
- 3) Minimal utilization of waterways (just 1.6% of 14500 km) due to poor infrastructure & diversion to fields along with issues of slow speed & water pollution.

↓ Decreasing share of railways in total freight carriage (35%) & increase in operating ratio (96.4%) has led to increase in cost which prohibits its use.

Opportunities in multimodal transportation

- 1) India's waterways can be utilized to maximum & schemes like National Waterway Act 2016 & Jal Marg Vikas project across NWI plan to

integrate transport modes.

2) Establishment of freight villages (like in Karanesi) & Ro-Ro terminals will ensure nodes that decrease cost & increase transport efficiency.

3) Tariff rationalization & privatization of railways are golden opportunities to extract benefits of railways which are the 4th largest goods carrier in world.

4) Road transport can be improved by better connectivity & engineering designs.

5) Schemes like RCS & Udan can integrate air services to achieve ful fledged multimodal transport.

6) Building of warehouses & infra along waterways (as per NIP) can further give better results.

India's achievement of \$ 1tn economy by 2025 depends on multimodal transport which should be maximised to its full usage.

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 थम 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।

COVID-19 pandemic has widely exposed the vulnerability of informal sector by rendering 81% of it unemployed. But it also presents an opportunity to rebalance formal informal economy dynamics.

Exposure of Vulnerability

- 1) Reduced sources of income due to job & livelihood loss.
- 2) No other alternatives available due to lack of skill development opportunities.
- 3) Increased out of pocket expenditure to cater to basic services of food & health, increasing vulnerability.
- 4) Major impact on migrants & women.

who do not have money to go back to their homes & face social discrimination respectively.

3) Destruction of supply chains of informal sector leading to further impoverishment of people.

6) 24% unemployment as predicted by CMIE & reduced growth rate to

1.5 - 2% as per World Bank.

7) Lack of basic health facilities & PPE kits etc & makes leaving them on the verge of death.

Rebalancing formal-informal dynamics

1) It provides an opportunity to integrate both these sectors to provide portability of social security (like PDS, PMJDY) to informal sectors.

2) Golden opportunity to bank on the gig economy (24% as per Oxford report)

to ensure better productivity & economic growth in terms of crisis

3) Schemes like PM Swasthi are a welcome step to resurrect supply chains of vendors (urban & rural) to integrate them in formal system.

4) Skill mapping (as by MSDE) of returning migrants will help in provision of better skill development opportunities to escalate to formal sector.

5) PM GKAY gives a chance to most underdeveloped districts to use informal workers to build community assets that can be used by formal sector workers.

6) Provision of wastepickers to be integrated into formal economy by means of APR.
COVID 19 can act as a blessing in disguise to provide better social security & economic benefits to informal workers for their holistic development.

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।

India's current gas usage accounts for nearly 6.5% which is planned to be raised to 15% by 2030. But achievement of this target comes with its own set of challenges & opportunities.

Drivers to become gas based economy

- 1) Increasing usage of gas (like natural gas) across citizens for transport & household activities
- 2) To achieve environmental benefits of low pollution emissions & provision of better air & water (in cities specially)
- 3) Increased imports of fossil fuels from West Asia is a burden of India's foreign exchequer which can be reduced.

- 4) Increasing cost of energy production
- 5) provision of employment opportunities
- 6) Achievement of INDC targets of Paris agreement by 2030.

Challenges

- 1) Usage of coal & fossil fuel still high due to wide availability & affordability of coal.
- 2) High usage of oil to fuel economic activities like transport & industries
- 3) Low commercial viability of natural gas extraction & hence reduced investment for the same.
- 4) Low infrastructure development in transportation of gas from one place to other (pipelines) hindering its usage.

Steps taken by govt

- 1) Creation of Indian Gas Exchange (IGX) on IEX to ensure better

availability of regassified imported natural gas via spot & forward markets ~~across~~ at cheap prices.

2) Construction of India Gas Grid (in North Eastern states) to build a pipeline connecting all these resource rich states.

3) Similar pipelines like JHDBPL & other ones built across India to achieve a gas based economy.

4) Provision of real time market exchange for gases to achieve price stability & ensure transparency in auctioning.

5) Provision of subsidies on gas usage to promote maximum usage.

The achievement of a gas based economy by 2030 is crucial in achieving \$1 Trn economy by 2025 & SDG goals by 2030. Better pricing (removing administrative pricing) & bringing gas under GST are future steps.

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

Climate change & associated events like increase of CO_2 concentrations to 410 ppm (as per WMO GHG bulletin) endanger marine & coastal ecosystems along with increased vulnerability.

Endangering marine & coastal ecosystems

1) Phenomena of ocean deoxygenation has led to decrease in oxygen levels (due to high temperature). This has led to death of various species due to increased O_2 demand.

2) Phenomena of Ocean acidification due to increased cases of acid rain has led to removal of coral shells, leading to biodiversity destruction & increased cases of flood (protected by corals).

3) High emissions from factories & agriculture has led to problems of eutrophication, which has led to species death due to increased nutrient levels.

4) Increased cases of floods & cyclones due to rise in sea surface temperature has threatened survival of fisheries & led to their extinction.

5) Loss of mangrove cover due to climate change leading to excess salinity has decreased flood control provisions & increased soil erosion.

Increasing vulnerability of coastal population

1) Due to decline in fisheries, the survival of coastal population has come on the brink of destruction.

2) Saltwater intrusion due to climate change has created issues of food & water security, thus endangering their survival.

- 3) Increased cases of floods & cyclones renders them helpless & leads to massive destruction of human life & property.
- 4) Issues of increased tourism & domestic & industrial activities lead to water pollution. This ultimately escalates into bioaccumulation & biomagnification, ~~threatening~~ leading to various diseases.

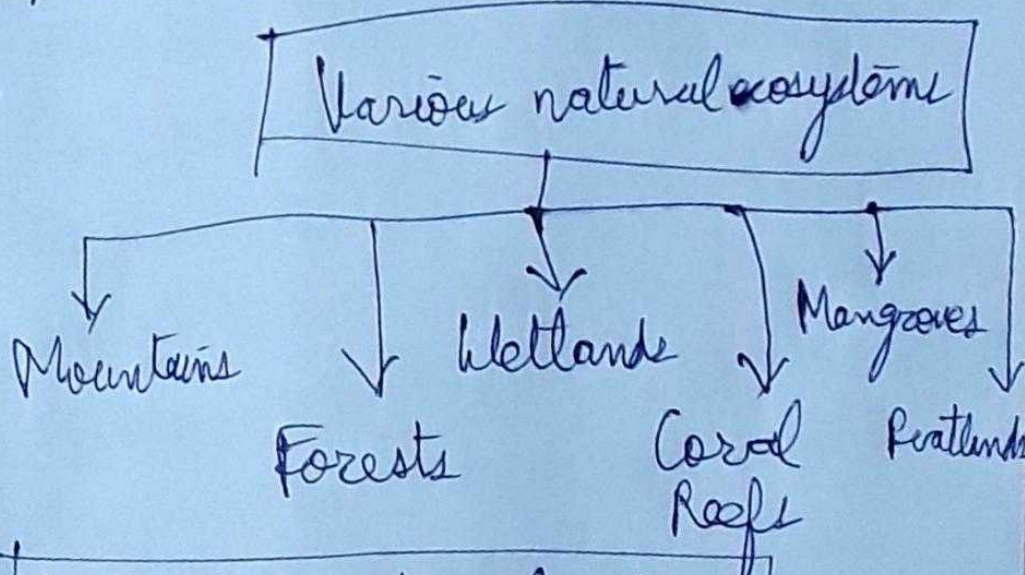
Ways to solve

- 1) Carbon sequestration activities (like to control emissions to achieve better ocean health).
- 2) Artificial nourishment of beaches & Integrated Coastal Management to achieve better results.
- 3) Building barrier dams like Rotterdam & mangrove cover, increase will provide better protection to flood control & soil erosion.
- 4) EWS measures to control floods. India comprises of nearly 4% of earth's fresh water resources & better coastal & marine economy will help achievement of SDG goal (SDG 14).

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 शमन का कार्य करते हैं।

Natural ecosystems (like forests, mangroves etc.) play a very important role in performing hazard mitigation functions to protect human life & property.



Hazard mitigation functions

1) Role of Mangroves → Mangroves help in acting as a barrier to cyclones (like Amphan) & help in flood control & soil erosion by means of their buttressed roots & pneumatophores.

2) Mangroves also help in protection of soil erosion by means of binding soil by roots which helps in preventing soil runoff & thus landslides.

3) Mountains (Mountain forests) help in binding soil to trees thus preventing cases of landslides & avalanches.

4) Forests act as binding force in filtering nutrients & providing carbon sequestration to prevent climate change issues which can lead to droughts (heat spells) & flood.

5) Forests also help in protection wrt floods by preventing soil runoff thus preventing floods & landslides.

6) Wetlands act as prime barriers to various hazards like floods & cyclones leading to preservation of

coastal community.

7) Wetlands also help in carbon sequestration & filtering of water to prevent cases of water pollution & increased emissions.

8) Coral reefs help in providing a barrier against increased sea water level & saltwater intrusion by building a chain across coast.

9) Coral reefs also help in filtering water & act as 'system engineers' to preserve coastal economy.

10) Seagrass help in about 11% carbon sequestration & provide fertilizer, food & sediment filtering activities to reduce coastal erosion & mangroves.

Thus natural ecosystems perform wide-spread functions in mitigation of hazards & should be preserved for achievement of SDG goals (SDG 14) by 2030.

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 आरम्भ की गई इंडिजेन (IndiGen) परियोजना पर कुछ प्रकाश डालिए।

Genome sequencing refers to the exact reading of base pairs in the genome to provide multiple economic & socio cultural benefits. It also has opportunities & challenges in scaling up.

Genome Sequencing

1) A genome is one complete set of genetic information of an organism stored in its DNA.

2) Genome sequencing refers to reading of base pairs (approx 3 billion) type by type (ATCG) to achieve multiple benefits.

Challenges in scaling up

1) Technology issue → Issue of wrong sequencing of genome at any point time

lead to wrong information about organisms' genome, which can adversely impact him via pharmacogenomics.

2) Legal issues of the participants who wish to get their genome sequenced vis-à-vis issue of consent.

⇒ Cyber security laws in India are not prudent (no data protection law) which can lead to leakage of put information.

4) Ethical issues of creating GMOS & designer babies based on genome sequencing

5) lack of infrastructure, funding & manpower expertise

Indigen Project

1) It is a flagship project by CSIR that will perform genome sequencing for 1008 Indians to generate database

2) It will be based on consent of these individuals to promote an

ethical ecosystem of genomic sequencing

Benefits of Indigen Project

- 1) Pharmacogenomics → Help in better drug development by identifying exact issues in Indian genomes.
 - 2) Precision & Preventive Health care to citizens based on generated database.
 - 3) Development of genetic database which carry the vulnerabilities of human genome which provide future impetus to R & D in this area.
 - 4) Boosting India's speed in field of genomics & bio informatics.
 - 5) Integration with other biotechnology revolutions like CRISPR Cas9 to achieve better results & healing of disease like cancer & hemophilia.
- Genome sequencing is a revolutionary step in biotechnology & hence should be used with caution to promote sustainable development.

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।

Radicalisation & societal dissention are huge internal issues that contribute to cyber & international Terrorism. They need to be curbed soon to achieve global peace.

Reasons for radicalisation & social dissention

- 1) Social discrimination among various religious & caste communities that creates an environment of frustration & alienation, resulting in radicalization.
- 2) Issues of borders security wrt Pakistan & Ind China which encourage radicalization by means of propaganda & provision of funds.
- 3) Issue of less economic development (as in North East India) leads to

further cases of radicalization

4) Insurgency & issue of migrants temper social ethnicity creating dissention & tensions within India.

Breeding ground for cyber & transnational terrorism

1) Increased radicalization has led to increase in organized crime activities (like money laundering, trafficking) that provide avenues for transnational terrorism

2) Cases of Maoists being supplied funds by ISIS & militants in POK by China is a prime example of the

3) Increased social disention leads to increase in propagandizing measures across cyber space (like violent videos) to create culture of cyber terrorism.

- 4) These play a major role in recruitment of members in terrorist groups due to increased hatred for government
- 5) Issue of 9/11 being carried out because of narco terrorism due to increased drug usage by unsatisfied individuals is a prime example.

Curbing radicalization & social disorientation

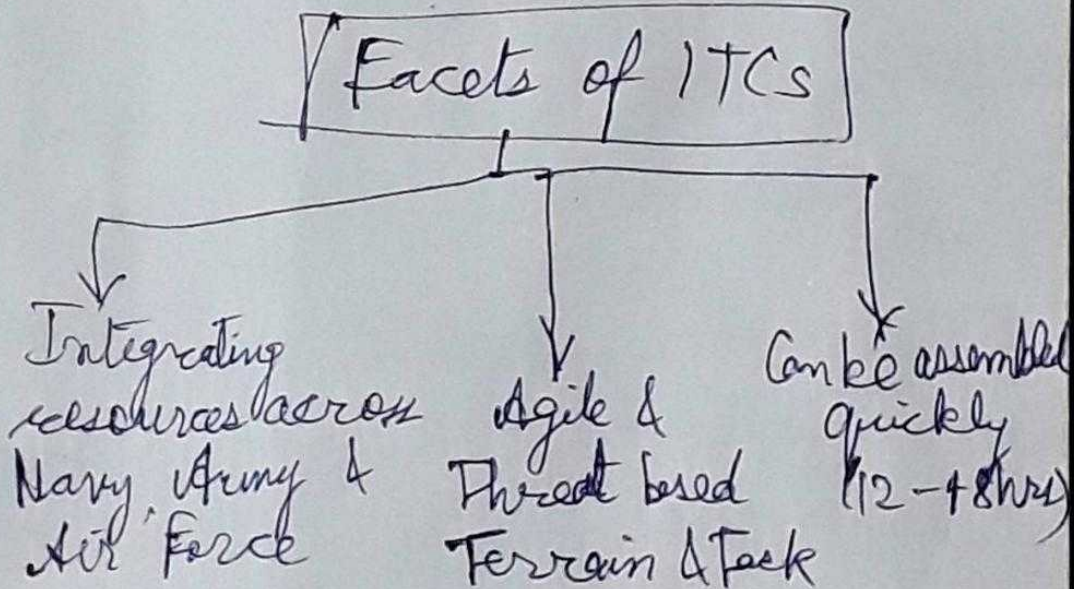
- 1) laws like IT Act 1885 & provision of firewalls (like Cyberdome) to screen such data & rejection of seditious etc.
- 2) Economic development by means of 5th schedule & infra creation (creation of ABCs like ATC) to achieve better economic employment
- 3) Power devolution by mode of MODNER & SHGS to curb radicalization
- 4) SAMADHAN strategy to curb Maoists & integrate them into society.
Indian values like Vasudhaiva Kutumbham & coupled with laws & decentralization is the way forward for achieving global peace.

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 Commands are the need of the hour to integrate our defence capabilities to achieve holistic results in security domain.



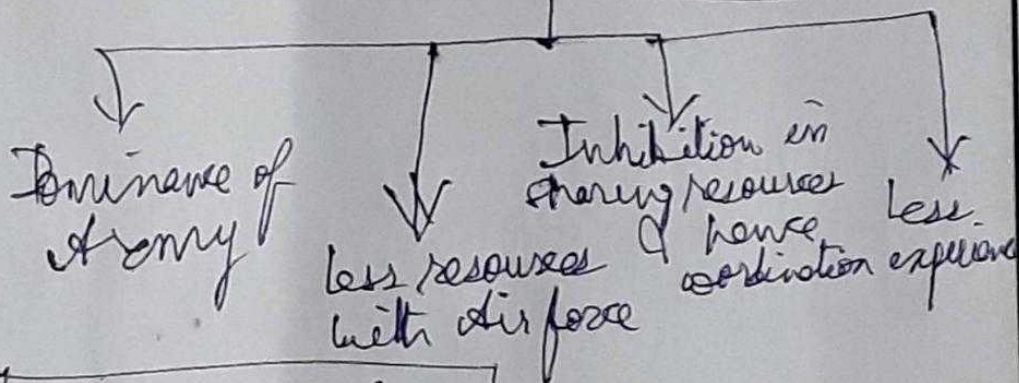
Need for ITCs to counter security challenges

I) ITCs will look to improve response of Indian defence forces to attacks by volatile neighbourhood of Pakistan & China.

- 1) It seeks to improve coordination among various forces to achieve optimum results & resource efficiency.
- 2) It carries both cadres of soldiers & doctors to cater to the health challenges faced during war.
- 3) Better & quick assemblage of forces (5000 under a Major General) to provide quick retaliation to counter threat attacks.
- 4) It seeks to be terrain & task based which will help solve border management issues by overcoming issues of hard terrain.
- 5) Gives impetus to 'Cold War' doctrine of India against Pakistan to immobilise forces along western border for quick results.

7) It seeks to build a thin, mean & lean force capable of following & executing orders quickly.

Issues with ITCs



Ways to solve

1) CDS can help achieve better resource devolution across all 3 forces for better & coordinated response.

2) Better tech & artillery availability (by means of DPEPP 2020 & PAP 2020) to achieve better results.

ITCs are the need of the hour to cater to multiple security challenges of tackling infiltration, money laundering, trafficking & waves by other nations.