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सामान्य अध्ययन (प्रश्न पत्र-III)/GENERAL STUDIES (Paper-III) (2930)

निर्धारित समय: तीन घंटे
Time Allowed: **Three Hours**

अधिकतम अंक: 250
Maximum Marks: 250

सामान्य अनुदेश

इस प्रश्न-सह-उत्तर (क्यू.सी.ए.) पुस्तिका में 55+1 पृष्ठ हैं। प्रश्न-पत्र, क्यू.सी.ए. पुस्तिका के अंत में संलग्न है, जो अलग (वियोज्य) किया जा सकता है और उम्मीदवार परीक्षा के उपरांत अपने साथ ले जा सकते हैं।

रफ कार्य के लिए, इस पुस्तिका के अंत में खाली पृष्ठ दिया गया है।

पुस्तिका प्राप्त होने पर, कृपया यह जांच कर लें कि इस क्यू.सी.ए. पुस्तिका में कोई कमी न हो, फटा हुआ पृष्ठ न हो अथवा कोई पृष्ठ गायब न हो इत्यादि। यदि ऐसा हो, तो इसके बदले नई क्यू.सी.ए. पुस्तिका प्राप्त कर लें।

General Instructions

This Question-Cum-Answer (QCA) Booklet contains 55+1 pages. Question Paper in detachable form is available at the end of the QCA Booklet which can be taken away by the candidate after examination.

For rough work, blank page has been provided at the end of this Booklet.

On receipt of the Booklet, please check that this QCA Booklet does not have any shortcomings, torn or missing pages etc. If, so, get it replaced with a fresh QCA Booklet.

(उम्मीदवार द्वारा भरा जाएगा/To be filled by the Candidate)

पंजीकरण सं./Registration No. : 45958906

अभ्यर्थी का नाम/Name of Student : TANVI GUPTA

माध्यम: हिंदी/अंग्रेजी
Medium: Hindi/English

ENGLISH

तारीख
Date

25/08/24

**सामान्य अध्ययन (प्रश्न पत्र-III)
GENERAL STUDIES (Paper III)**

केंद्र
Centre

CHANDIGARH

निरीक्षक के हस्ताक्षर
Invigilator's Signature

	<p style="text-align: center;">महत्वपूर्ण अनुदेश</p> <p>उम्मीदवारों को नीचे उल्लिखित निर्देश सावधानी से पढ़ लेने चाहिए। किसी भी निर्देश का उल्लंघन करने पर उम्मीदवारों को मिलने वाले अंकों में कटौती, उम्मीदवारी रद्द या आयोग के परवर्ती परीक्षाओं के लिए वर्जित करने इत्यादि के रूप में दण्डित किया जा सकता है।</p>	<p style="text-align: center;">Important Instructions</p> <p>Candidates should read the undermentioned instructions carefully. Violation of any of the following instructions may entail penalty in the form of deduction of marks, cancellation of candidature, debarment from further Examination of the Commission etc.</p>
1	<p>(क) अपना पंजीकरण सं. एवं अन्य विवरण केवल प्रश्न-सह-उत्तर पुस्तिका (क्यू.सी.ए.) में उम्मीदवार के लिए निर्धारित स्थान पर ही लिखें।</p> <p>(ख) इस पुस्तिका में अन्यत्र कहीं भी अपना नाम, पंजीकरण सं., मोबाइल नं., पता अथवा प्रश्न-सह-उत्तर पुस्तिका (क्यू.सी.ए.) संख्या न लिखें जिससे आपकी पहचान का खुलासा हो।</p>	<p>(a) Write your Registration Number and other details only in the space provided in the Question-Cum-Answer (QCA) Booklet for candidates.</p> <p>(b) Do not disclose your identity in any manner such as, by writing your Name, Registration number, Mobile number, Address, Question-Cum-Answer (QCA) Booklet No. etc. elsewhere in the Booklet</p>
2	<p>अपनी प्रश्न-सह-उत्तर पुस्तिका में कहीं भी प्रश्नों के वास्तविक उत्तर के अतिरिक्त कुछ न लिखें जैसे कि कोई कविता/दोहा, अभद्र या अपमानजनक अभिव्यक्ति इत्यादि और न ही कोई ऐसा चिन्ह/निशान बनाएं जिसका उत्तर से सम्बन्ध न हो।</p>	<p>Do not write in the QCA Booklet anything other than the actual answer such as couplet, obscene, abusive expression etc., nor put any sign/mark having no relevance to the answer.</p>
3	<p>परीक्षक को प्रत्यक्ष/अप्रत्यक्ष रूप से कोई भी प्रार्थना/धमकी भरी बातें न लिखें।</p>	<p>Do not make any direct/indirect appeal/threat to the examiner.</p>
4	<p>उत्तर अस्पष्ट अथवा गंदी लिखावट में न लिखें। इस प्रकार के उत्तर का मूल्यांकन नहीं भी किया जा सकता है।</p>	<p>Do not write answers in bad/illegible handwriting. Such answers may not be evaluated.</p>
5	<p>उत्तर स्याही में ही लिखें। उत्तर लिखने के लिए पेंसिल का उपयोग न करें, हालांकि आरेख, चित्र इत्यादि बनाने के लिए पेंसिल का उपयोग किया जा सकता है।</p>	<p>Write answers in ink only. Do not use pencil for writing the answers. However, pencil may be used for drawing diagrams, sketches, etc.</p>
6	<p>प्रवेश पत्र में उल्लेख किए गए माध्यम के अलावा अन्य किसी माध्यम में उत्तर न लिखें। अधिकृत और अनधिकृत की मिली जुली भाषा का भी उपयोग न करें।</p>	<p>Do not write answers in medium other than the authorized medium in the Admission Certificate. Do not use mixed language either i.e. authorize and unauthorized media together for writing answers.</p>
7	<p>प्रश्नों के उत्तर ठीक उसके नीचे दिए गए निर्धारित स्थान पर ही लिखें। निर्धारित स्थान के अलावा किसी अन्य स्थान पर लिखे गए उत्तर का मूल्यांकन नहीं किया जाएगा।</p>	<p>Write answer at the specific space (right below the question) only. Answers written elsewhere at unspecified places in the booklet shall not be evaluated.</p>
8	<p>यदि आप अपने किसी उत्तर को रद्द करना चाहते हैं तो उसे पेन से काट दें तथा उस पर "रद्द" लिख दें, अन्यथा उसका मूल्यांकन किया जा सकता है।</p>	<p>If you wish to cancel any work, draw your pen through it and write "Cancelled" across it, otherwise it may be valued.</p>

कार्यालय के प्रयोग हेतु For Official Use	कार्यालय के प्रयोग हेतु For Official Use
परीक्षक के हस्ताक्षर Signature of Examiner(s)	

प्राप्तांक के विवरण (परीक्षक द्वारा भरा जाए)/ Marks Details (To be filled by the Examiner(s))

प्रश्न सं. Q. No.	अंक Marks		प्रश्न सं. Q. No.	अंक Marks	
1			11		
2			12		
3			13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		
उप-योग (A) Subtotal (A)			उप-योग (B) Subtotal (B)		
सकल योग (A+B) / GRAND TOTAL (A+B)					



सामान्य अध्ययन (प्रश्न पत्र-III)/GENERAL STUDIES (Paper-III) (2930)

निर्धारित समय: तीन घंटे
Time Allowed: **Three Hours**

अधिकतम अंक: 250
Maximum Marks: **250**

प्रश्न-पत्र संबंधी विशेष अनुदेश

कृपया प्रश्नों के उत्तर देने से पूर्व निम्नलिखित प्रत्येक अनुदेश को ध्यानपूर्वक पढ़ें:

कुल बीस प्रश्न दिए गए हैं जो हिंदी और अंग्रेजी दोनों में छपे हैं।

सभी प्रश्न अनिवार्य हैं।

प्रत्येक प्रश्न/भाग के लिए नियत अंक उसके सामने दिए गए हैं।

प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए, जिसका उल्लेख आपके प्रवेश-पत्र में किया गया है, और इस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यू.सी.ए.) पुस्तिका के मुख-पृष्ठ पर निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिखे गए उत्तर पर कोई अंक नहीं मिलेंगे।

प्रश्न संख्या 1 से 10 तक का उत्तर 150 शब्दों में तथा प्रश्न संख्या 11 से 20 तक का उत्तर 250 शब्दों में दीजिए।

प्रश्नों में इंगित शब्द सीमा को ध्यान में रखिए।

प्रश्न-सह-उत्तर पुस्तिका में खाली छोड़े गए कोई पृष्ठ अथवा पृष्ठ भाग को पूर्णतः काट दीजिए।

QUESTION PAPER SPECIFIC INSTRUCTIONS

Please read each of the following instructions carefully before attempting questions.

There are TWENTY questions printed both in HINDI and in ENGLISH.

All questions are compulsory.

The number of marks carried by a question/part is indicated against it.

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 a medium other than the authorized one.

Answers to Questions No. 1 to 10 should be in 150 words, whereas answers to Questions No. 11 to 20 should be in 250 words.

Keep the word limit indicated in the questions in mind.

Any page or portion of the page left blank in the Questions-cum-Answer Booklet must be clearly struck off.

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.

All the Best

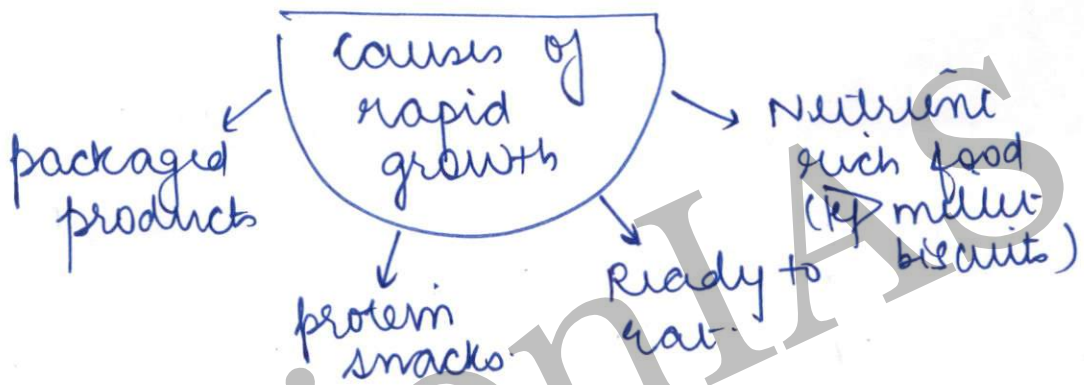
1.

खाद्य प्रसंस्करण उद्योग का तीव्र विकास किस प्रकार भारत में खाद्य सुरक्षा संबंधी चुनौतियां उत्पन्न कर रहा है? (उत्तर 150 शब्दों में दीजिए)
How is the rapid growth of the food processing industry leading to food safety challenges in India? (Answer in 150 words)

10

उम्मीदवारों को इस कक्ष में नहीं लिखना चाहिए
Candidates must not write on this margin

The food processing industry is expanding & contributes 8% to the GDP currently.



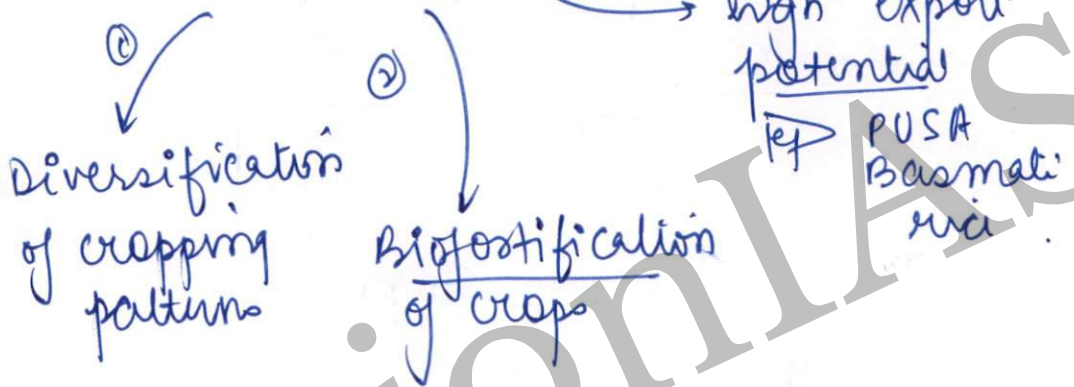
Safety challenges due to rapid growth

- ① Use of preservatives for increasing shelf life.
- ② Adulteration of materials for greater profits.
- ③ Ready to eat products are not that healthy → reduced nutrition

④ Additives in food for colour
→ Rhodamine B case recently.

⑤ Plastic packaging of food →
micro plastics entering food web.

However, food processing industry
has benefits too



Thus way forward lies in

① effective regulation
of food processing
industries

② Food Testing
labs to
test for preservatives
& additives.

The govt. initiatives like 'eat right
campaign' & SAMPADA mission
are steps in right direction to
promote food processing.

2.

भारत की सार्वजनिक वितरण प्रणाली के अंतर्गत उचित मूल्य की दुकान (FPS) का प्रारंभ एक विकासशील प्रक्रिया है। विवेचना कीजिए। (उत्तर 150 शब्दों में दीजिए)
Under the Public Distribution System of India, the Fair Price Shop (FPS) transformation is an evolving process. Discuss. (Answer in 150 words)

10

उम्मीदवारों को इस हाशिये में नहीं लिखना चाहिए
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PDS (Public Distribution System) is the largest food Distribution System of India.

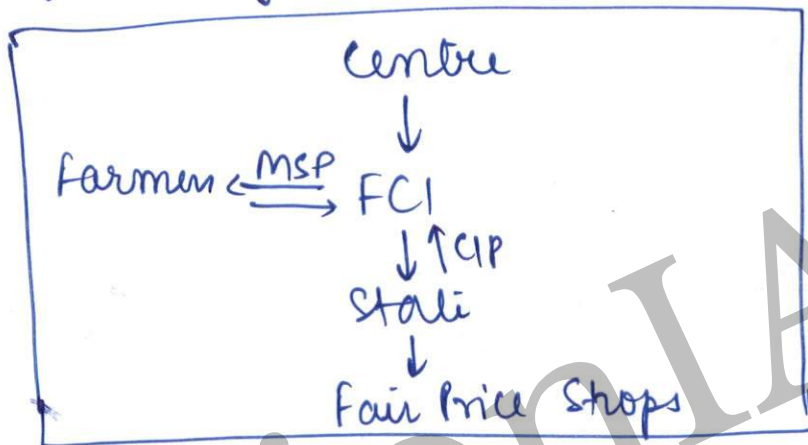


Fig. working

FPS is an evolving process - consistent transformation

- ① Digitising the FPS to prevent corruption
→ operation kamak exposed is
- ② Technological advancements for authentication of beneficiaries

- ③ Crop mix must be improved.
↳ currently, rice-wheat system.
- ④ Storage facilities must be robust to prevent pest attack & wastage
- ⑤ Tracking of receipt & disbursal of crops for prevention of diversion
Top using GPS Tracking

Steps taken

SMS based monitoring

Adhaar enabled authentication
end to end digitisation of transactions

PDS must be enhanced &
FPS must be transformed to ensure food security based on Shanta Kumar Committee recommendation.

3.

भारत में एग्रीटेक स्टार्ट-अप्स किसानों की कृषि उत्पादकता एवं बाजार पहुंच बढ़ाने में किस प्रकार मदद कर रहे हैं? (उत्तर 150 शब्दों में दीजिए)

How are agri-tech startups in India helping farmers in enhancing farm productivity and market access? (Answer in 150 words)

10

उम्मीदवारों को इस ह्रासिए में नहीं लिखना चाहिए
Candidates must not write on this margin

India, despite comparative advantage (20 agro climatic zones) has not been able to increase farmer income & productivity much.

Agri-tech startups can help farmers in

↑ FARM PRODUCTIVITY

① Resource efficiency techniques
↳ Nanofibres for efficient use of fertilisers.

② Better variety of seeds
↳ GM Mustard, GM rubber
↳ in North East.

③ Soil efficiency & planning ↳ LIDAR Technology, KISAN drone manufacturing

④ Increase yield ↳ Root stock tech. for fruit production

- ⑤ Dryland farming \Rightarrow Deep Water Placement Technology, provided by startups.

↑ MARKET ACCESS

- ① New modes of marketing
 \Rightarrow NAVDEX, MCX - facilitating farmers for in future trading.
- ② Digital apps for market access
 \Rightarrow Zepto.
- ③ Increasing ease of moving (Agro logistics)
- ④ Facilitate diversification of cropping pattern \rightarrow wide market
 \hookrightarrow \Rightarrow Horticulture, Technical Textile in Sericulture
- ⑤ Market link to farmers
 \Rightarrow ITC chaupal

Agri-Tech startups can play an important role in doubling farmer income.

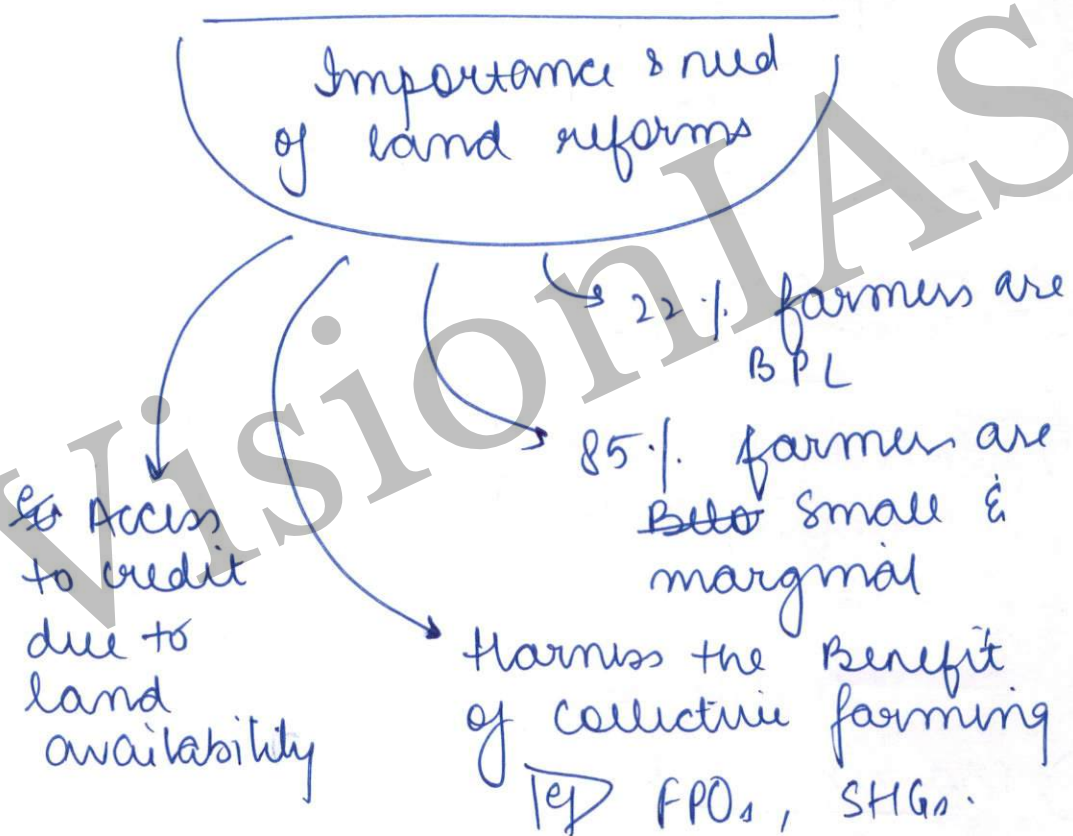
4.

भारत में भूमि सुधारों के प्रभावी कार्यान्वयन में भूमि अभिलेखों के डिजिटलीकरण की भूमिका पर चर्चा कीजिए। (उत्तर 150 शब्दों में दीजिए)
Discuss the role of digitization of land records in the effective implementation of land reforms in India. (Answer in 150 words)

10

उम्मीदवारों को इस हाशिए में नहीं लिखना चाहिए
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Indian agriculture has not transformed production into profitability of farmers for due to ineffective land reforms.

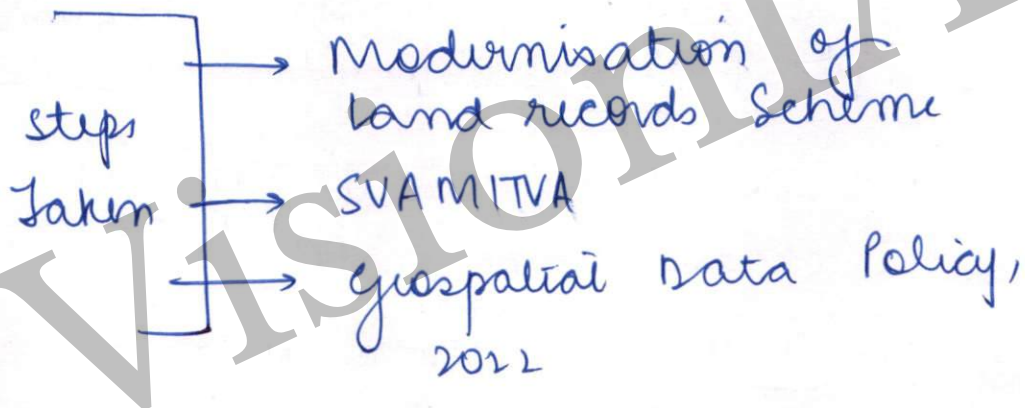


Role of land digitization of land records

① Access to data for evidence

Based policy \Rightarrow Geospatial data

- ② easy to provide ownership to tendents based on digital data.
- ③ Prevent abuse of power by locals due to centralised data
- ④ Provide Rent regulation would be easy due to effective land titlment.



Land reforms must be undertaken to do "ease of doing agriculture"
ensure

5.

भारत को अपने जनसांख्यिकीय लाभांश का पूर्ण उपयोग करने और आर्थिक विकास में तेजी लाने के लिए एक विनिर्माण-केंद्रित विकास मॉडल को अपनाने की आवश्यकता है। विवेचना कीजिए। (उत्तर 150 शब्दों में दीजिए)

To fully exploit its demographic dividend and accelerate economic growth, India needs to adopt a manufacturing-led growth model. Discuss. (Answer in 150 words)

10

Indian manufacturing sector share in GDP has been stagnant at 16% of GDP since last 30 years.

manufacturing led growth to

(A) Exploit Demographic Dividend

(1) It is labour intensive
↳ Textile sector

85% pop.
< 35 years

(2) Less skilled labour required
↳ reduces inequality.

(3) Spillovers for other sector -
agriculture through food processing

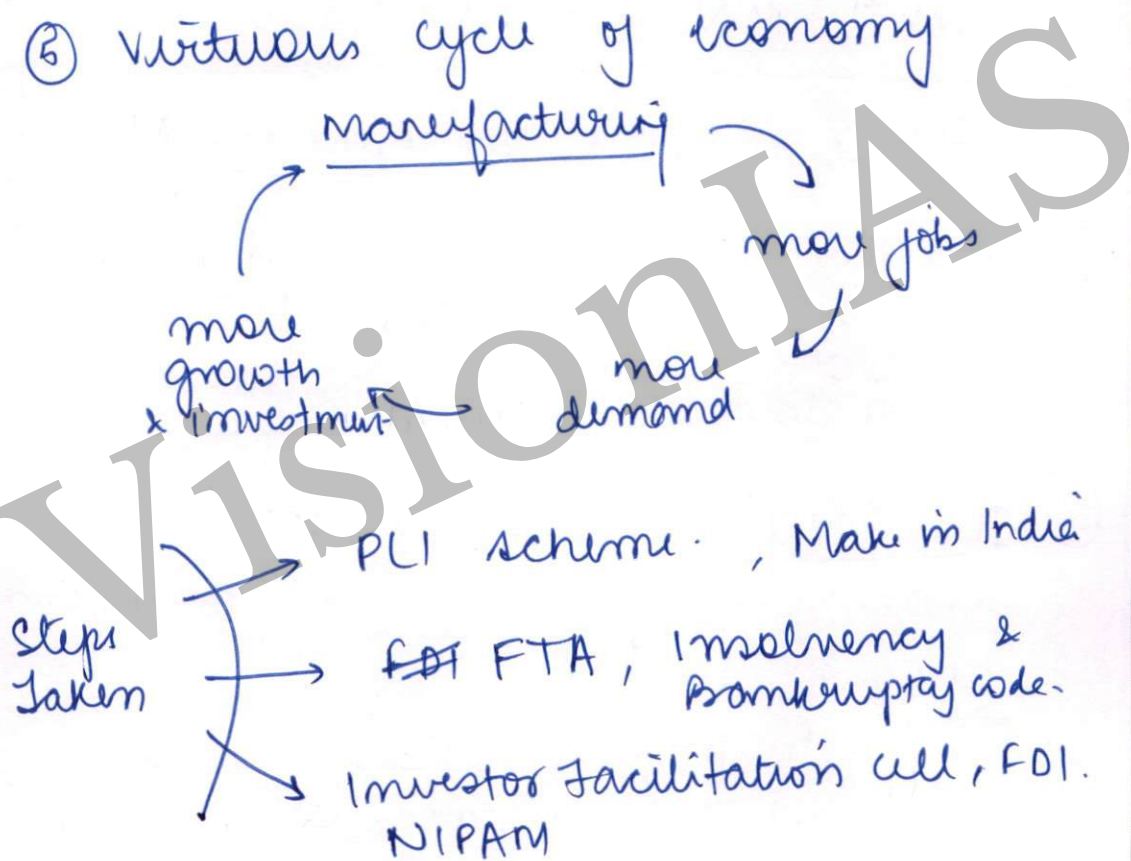
(4) Green jobs ↳ Suryamitras
(for solar plants).

(B) Accelerate Economic Growth

(1) Integration in Global Value chains (1% integration)

increase economic growth by 10.5% - NITI Aayog)

- ② Benefits for other sectors
↳ energy, automobile
- ③ Base to M&MEs - contribute 30% to GDP
- ④ Increase export potential of India
- ⑤ virtuous cycle of economy



India needs to walk on 2 legs on skilled services & labour intensive manufacturing for harnessing demographic dividend.

6.

जलवायु परिवर्तन के परिणामस्वरूप बढ़ते प्राकृतिक खतरों से निपटने के लिए भारतीय तटीय समुदायों की प्रत्यास्थता को किस प्रकार मजबूत किया जा सकता है? (उत्तर 150 शब्दों में दीजिए)

How can the resilience of Indian coastal communities be strengthened to tackle the growing natural hazards resulting from climate change? (Answer in 150 words)

10

India is 7th most vulnerable to climate change (Climate Change Risk Index)

Risk of Natural hazards from climate change to coastal communities

- ① Intense cyclones \rightarrow Biparjaya, Alphan, Amphan
- ② Storm surge events increased
 \rightarrow degradation of agricultural lands
 \uparrow water borne diseases.
- ③ Sea level rise (due to thermal warming of oceans) \rightarrow Submergence of land.
 \rightarrow triggered coastal refuges
 \rightarrow Gorumara Islands (Sunderbans)
- ④ threat to food security & economic livelihood
 \rightarrow fisherman community.

Measures to Build Resilience of Coastal Communities

- ① Build ^{sea} walls \rightarrow Garuda Guardians in Indonesia.
- ② Increase coastal Bushields - Mangroves.
- ③ Adopt Mission Life (nature based solutions), NPCA, ICZM.
- ④ Empower coastal communities through training \rightarrow Mangrove Warriors (Nigeria)
- ⑤ Insurance coverage against damage
- ⑥ Private sector involvement \rightarrow Adopt a Beach program.

The coastal resilience require adoption of "whole of society" approach.

7.

भारत में अधिक संधारणीय पर्यावरण को बढ़ावा देने के लिए ग्रीन क्रेडिट प्रोग्राम किस प्रकार कार्बन प्रबंधन से कहीं अधिक विस्तृत है? इसके कार्यान्वयन के संबंध में विभिन्न चिंताएं क्या हैं? (उत्तर 150 शब्दों में दीजिए)

How does the Green Credit Programme extend beyond carbon management to promote a more sustainable environment in India? What are the various concerns about its implementation? (Answer in 150 words)

10

उम्मीदवारों को
इस ह्राशिए में
नहीं लिखना
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Candidates
must not
write on
this margin

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8.

जब पहले से ही अन्य उपग्रह नेविगेशन सिस्टम उपलब्ध हैं, तो NavIC की आवश्यकता क्यों है? (उत्तर 150 शब्दों में दीजिए)

What is the need for NavIC when existing satellite navigation systems are already available?
(Answer in 150 words)

10

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9.

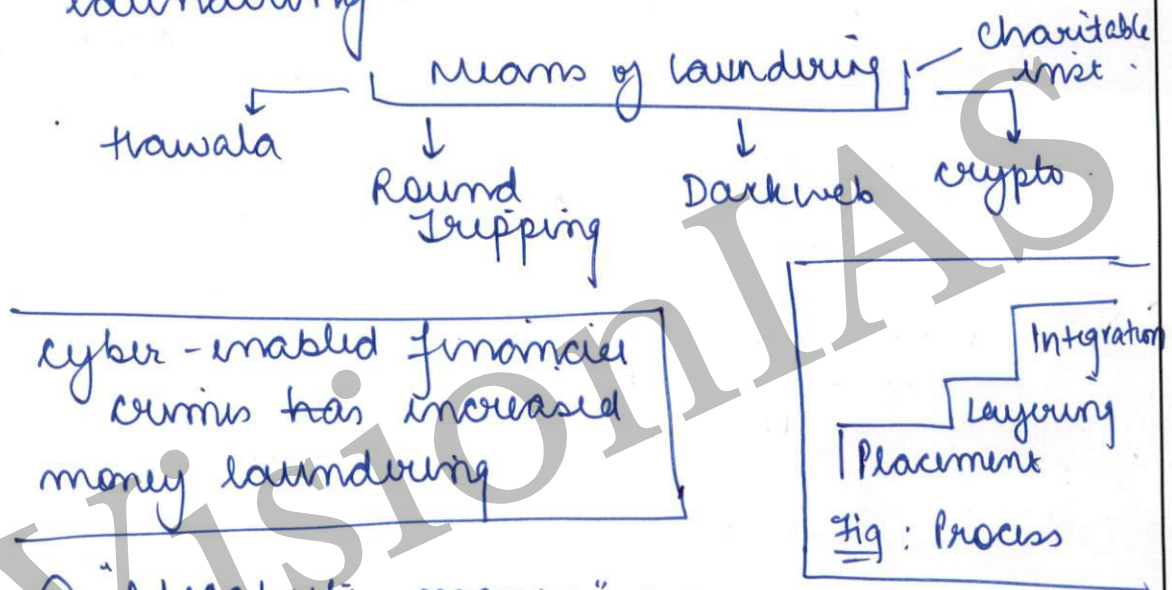
साइबर-सक्षम वित्तीय अपराध वैश्विक धन शोधन (मनी लॉन्ड्रिंग) के नए क्षेत्र के रूप में उभरा है। चर्चा कीजिए। सरकार इस मुद्दे का समाधान किस प्रकार कर सकती है? (उत्तर 150 शब्दों में दीजिए)

Cyber-enabled financial crime has emerged as the new frontier of global money laundering. Discuss. How can the government address this issue? (Answer in 150 words)

10

उम्मीदवारों को इस हार्शिए में नहीं लिखना चाहिए
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India ranks 70/141 in Basel Anti-money laundering Index. The digital penetration has increased the risk of money laundering.



- ① "Megabyte money" has increased speed of transactions across borders. (Darknet transactions)
- ② Greater means of laundering money \rightarrow cryptocurrency used for extortion.
- ③ Increased interlinkages between organised crime conglomerates & Terrorist organisation.
 \rightarrow Chakra operation of CBI -
 (Smuggling of animals) -

④ Decentralised nature of transactions
↳ low investigative bandwidth
↳ reduces deterrence.

⑤ Increase in financial hubs ↗
GIFT city in India → misuse of P-NOTES,
round tripping

Ways to address this issue

① Coordination between different
investigative ministries ↗ CBI, ED, SFIO

② Cyber proofing & ethical audits
regularly to identify risks.

③ Global cooperation ↗ Tax Info.
Exchange Agreements.

④ Border security to prevent
trafficking

⑤ Administrative measures
↳ Faciless Assessment of Taxation
to reduce tax terrorism.

↳ Project INSIGHT, GAAR → effectively enforced.

The 3Es approach of funding, freezing
& forfeiting must be employed
to tackle this emerging menace.

10.

इंडियन आर्मी वर्ष 2024 को 'प्रौद्योगिकी समावेशन वर्ष (Year of Technology Absorption)' के रूप में मना रही है। इसके आलोक में, स्पष्ट कीजिए कि भारत के रक्षा क्षेत्रक में प्रौद्योगिकी के समावेशन की आवश्यकता क्यों है। इस पहल में भारत को किन चुनौतियों का सामना करना पड़ सकता है? (उत्तर 150 शब्दों में दीजिए)

The Indian Army is observing the year 2024 as the 'Year of Technology Absorption'. In light of this, explain why there is a need for technology absorption in the defence sector of India. What challenges can India face in this initiative? (Answer in 150 words)

10

The increasing shift from traditional warfare to hybrid warfare requires Indian defence sector to stay ahead of the technology curve.

Need for Technology absorption in defence

- ① Better intelligence \Rightarrow Mandarin translators (based on LALM models)
- ② For tracking of suspects & vehicles \Rightarrow Kloggers deployed by army.
- ③ Real time monitoring + coordination \Rightarrow Sarvatra Lekham software, CCTNS, NATGRID
- ④ Threat assessment \Rightarrow Drone Fed Analysis
- ⑤ Border security enhancement \Rightarrow Responder robots.
- ⑥ Secure communication of sensitive information \Rightarrow Quantum key

Distribution (uses photons).

However, there are challenges in this regard

- ① Low Defence Budget of India (2% of GDP)
- ② Lack of trained personnel
- ③ Poor R&D in defence sector
- ④ May require import of critical minerals like Lithium, Cobalt
↳ increase imports.
- ⑤ Risk to privacy of individuals
↳ in National Facial Recognition System (NAFRS)

Way forward!

↳ Increase R&D budget
↳ harness potential of private sector

comprehensive capacity building framework of defence personnel.

The defence sector must be able to adopt the global standards of Technology.

11.

भारत के पूर्वोत्तर क्षेत्र (NER) में व्यापार एवं उद्योगों के विकास में किन समस्याओं का सामना करना पड़ा है? इन समस्याओं से निपटने हेतु किए गए उपायों पर टिप्पणी कीजिए। (उत्तर 250 शब्दों में दीजिए)
What are the issues faced in the development of trade and industries in the North-Eastern Region (NER) of India? Comment on the measures that have been taken to tackle these issues. (Answer in 250 words)

15

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The North-Eastern region of India has international border with 5 nations & has diverse demography & geography. This has created socio-economic challenges.

Issues faced in development of Trade & Industry in North-East

- ① Inadequate connectivity with mainland. (Chicken neck corridor)
- ② Lack of robust infrastructure
↳ increases logistics cost.
- ③ Cultural diversity has often triggered ethnic conflicts
↳ recent Kuki-Miti conflict
↳ reduces private investment.
- ④ Inner line permit as a roadblock to develop industry
- ⑤ Regulatory burdens ↳ Schedule 5 requires Groom Sabha approval
↳ delay & cost overruns.

⑥ China angle - criticised Indian investment in North East.

⑦ Lack of skilled manpower

Measures taken to tackle it & increase trade & industry

① Infrastructural Boost

↳ Regional Connectivity scheme - "no frills airport", Bogibel Bridge.

② STINER project for investment in S&T.

③ PM-DEVINE for skill development of locals

④ International Cooperation

↳ Kaladom Multimodal Project (Myanmar), MIST (submarine cables).

⑤ Peace Accords ↳ with Bodos & Nagas to increase private sector spirits.

The development of North East is essential for regional stability as well as attaining the goals of AMRIT KAL.

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12.

जलवायु परिवर्तन और बढ़ते जल संकट के युग में, सूक्ष्म सिंचाई प्रणालियां भारत में संधारणीय कृषि पद्धतियों में किस प्रकार योगदान दे सकती हैं? (उत्तर 250 शब्दों में दीजिए)

In the era of climate change and growing water scarcity, how can micro-irrigation systems contribute to sustainable agricultural practices in India? (Answer in 250 words)

15

उम्मीदवारों को इस हार्जिए में नहीं लिखना चाहिए
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While 55% of Indian agriculture is rainfed, the climate change & declining groundwater levels (0.3m p.a. - NASA) calls for micro-irrigation systems.

Impact of climate change & water scarcity on agriculture

- ① monsoonal rhythm has changed
- ② flash droughts & flash floods
↳ reduce crop productivity
- ③ 1°C increase in temperature reduce agricultural productivity by 10.7%. (IPCC).
- ④ Increase in locust & pest attacks
↳ contribute to 25% damage to crops.

Micro-irrigation systems can help in tackling these issues

- ① Resource efficiency
↳ optimum utilisation of water
- ② Prevent soil salinisation & resultant land degradation
eg in North-West Belt.
- ③ Reduce virtual water exports of India
eg 2 lakh litre water used for 100 kg sugarcane
- ④ Incentivise diversification of crops due to less dependence on rainfall.
- ⑤ cost effective due to optimum land productivity benefits.
- ⑥ Tackle the water intensive nature of agriculture - 78.5% of groundwater is used by agriculture sector.
- ⑦ Replenish groundwater levels through harnessing potential of intercropping.
- ⑧ Reduce eutrophication of rivers

Steps taken by Govt. for micro-irrigation promotion

Pradhan Mantri
Kishi Sinchayi
Yojana

[More crop per
drop]

Soil
Health
Cards,

Kisan Credit
Cards to
buy

Watershed
management
Program.

micro sprinklers
micro-irrigation
drip irrigation
devices.

Further steps required

- ① Incentivise farmers through cost deduction
- ② e-coupal platforms be harnessed for awareness generation
- ③ Credit availability to small & marginal farmer (>85%)

Thus sustainable agriculture requires sweet synthesis of land productivity & water productivity

13.

भारतीय रेलवे में माल परिवहन से संबंधित समस्याओं का समाधान करने तथा घरेलू माल ढुलाई में इसकी हिस्सेदारी बढ़ाने के लिए कौन-सी रणनीतियां अपनाई जा सकती हैं? (उत्तर 250 शब्दों में दीजिए)

What strategies can be adopted to overcome the issues pertaining to freight transportation in the Indian Railways and increase its share in the domestic freight? (Answer in 250 words) 15

उम्मीदवारों को इस हाशिए में नहीं लिखना चाहिए
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The 'ease of moving' is the pre-requisite for 'ease of doing business'. In this regard freight transportation through Indian Railways is of utmost importance

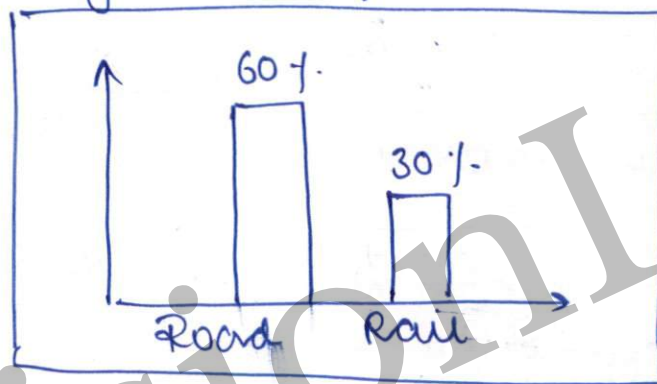


Fig Current modal mix in freight transport.

Issues with skewed modal mix

- ① Congestion on roads → delay in transportation.
- ② Road transportation is costly (current logistics cost is 14% in India)

- ③ Environment pollution is more through roadway

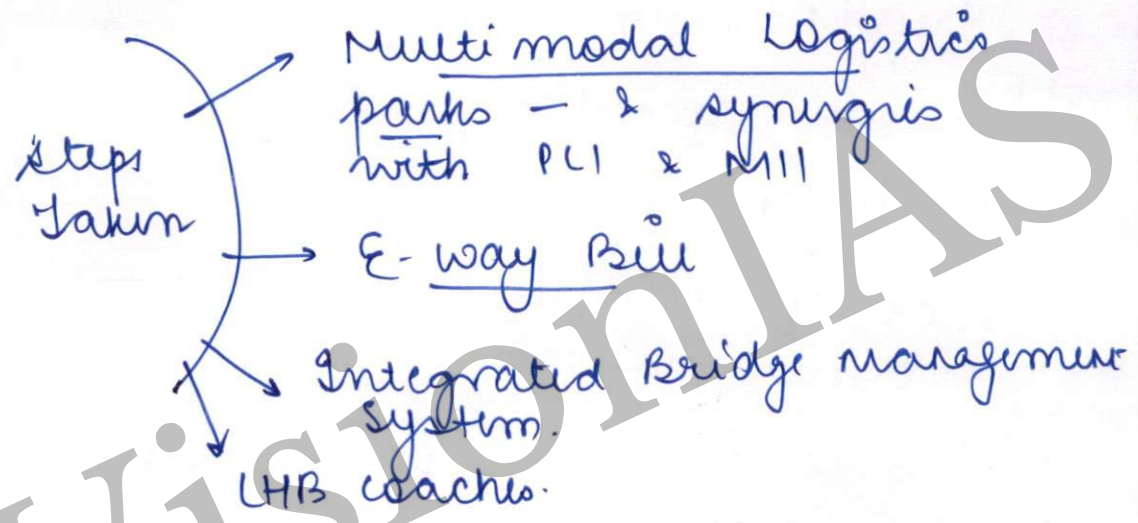
Issues with freight transportation in Indian railways

- ① Cross subsidisation - 2/3rd of Railway revenues come from Freight sector.
- ② lowers operating profits of Railways - < 2%
- ③ lack of dedicated corridors → increase collision.

Strategies that can be adopted to overcome these issues

- ① Dedicated Freight Corridors -
 - ⊙ for seamless transportation
 - ⊙ World class Infrastructure -
- ② Harness the private sector potential in Railways (eg) success of IRCTC.
- ③ An Independent regulator of Railways sector to prevent conflict of interest.

- ④ Agglomeration Economies along the freight corridor for better infrastructure & investment
- ⑤ International cooperation
eg Bullet train (Japan)
- ⑥ Multi logistics Parks form for effective Transshipment-



The connectivity revolution through efficient Railway network will help in improving 3C.
congestion ↓
climate ↓

14.

उन कारकों पर चर्चा कीजिए जिन्होंने नवीकरणीय ऊर्जा क्षेत्र में प्रभावशाली प्रगति करने और वैश्विक नवीकरणीय ऊर्जा परिवर्तन में अग्रणी के रूप में स्थापित होने में भारत की सहायता की है। (उत्तर 250 शब्दों में दीजिए)

Discuss the factors that have aided India in making impressive strides in the renewable energy sector and establishing itself as a frontrunner in the global renewable energy transition. (Answer in 250 words)

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India ranks 7th in climate change performance Index due to its impressive efforts in Renewable energy sector.

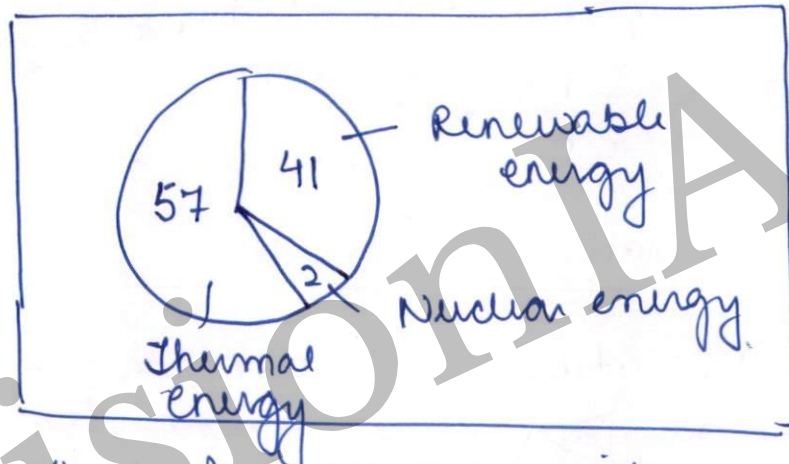


Fig : Installed capacity

efforts taken by India in Renewable energy sector & become for runner.

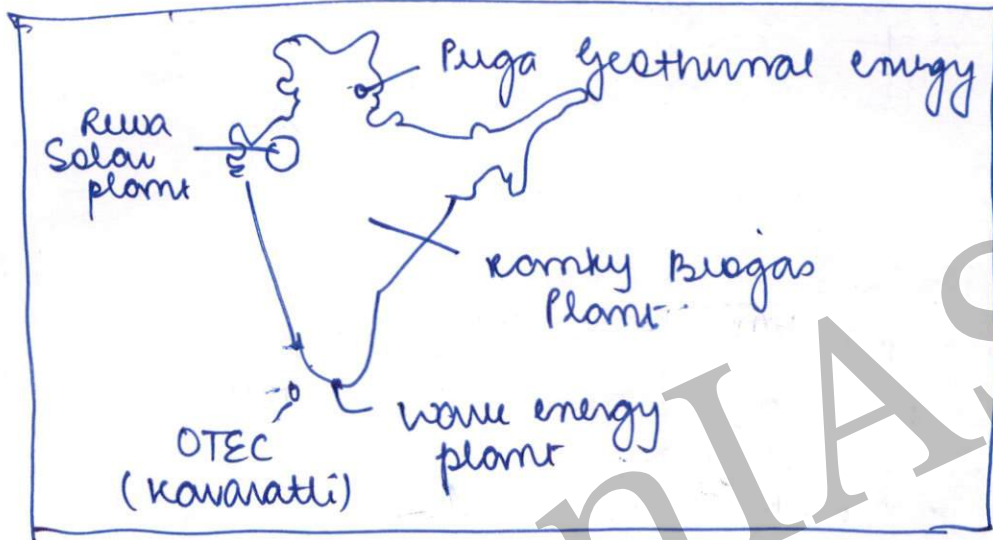
① Infrastructure enhancement

eg Solar parks, wind parks
(Bhadra) (Brahmanvel)

② Green skills enhance development
eg suryamitras, Green Skill

development program.

- ③ Incentivise FDI in renewable energy sector \rightarrow PLI scheme
- ④ Diversification of modes of Renewable energy generation



- ⑤ International cooperation in green energy \rightarrow green energy strategic partnership (Denmark)
- ⑥ Create innovative mechanisms for fund generation through creating carbon market (PAT, EScerts)
- ⑦ International leadership through
global climate Alliance (G20)
 \rightarrow ISA
 - ① World Solar Bank
 - ① Solar X Grand Challenge
 - ① OSOWOG

However there are certain issues with this transition to green energy

- ① Social cost → job loss in thermal sector
- ② Technological issues (eg) solar wafers imported from china
- ③ Climate Finance - India needs \$10 trillion to become net zero by 2030.
- ④ Lack of skilled manpower.
- ⑤ Lack of energy storage system, e-waste

The way forward lies in

slow transition to prevent disruption of economy

Manufacturing potential through FDI * R&D

skill, reskill * upskill of labour.

The Green energy transition will help India in solving the energy



15.

उर्वरकों और कीटनाशकों से युक्त कृषि अपवाह पर्यावरण प्रदूषण में किस प्रकार योगदान देता है? कृषि अपवाह के प्रभाव को कम करने के लिए क्या उपाय अपनाए जा सकते हैं? (उत्तर 250 शब्दों में दीजिए)

How does agricultural runoff containing fertilizers and pesticides contribute to environmental pollution? What measures can be taken to mitigate the impact of agricultural runoff? (Answer in 250 words)

15

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Agriculture sector is responsible for 30% of GHG emissions, primarily attributed to fertiliser & pesticides.

Impact of agricultural runoff contributing to environmental pollution

① Pollution of rivers due to eutrophication -
 1.3 Adverse impact on biodiversity
 1.2 reduce O₂ levels of water
 1.1 coral bleaching due to acidification

② Ground water pollution due to seepage of fertilisers into underground.
 ↳ increase contaminants

Fact file
 ① 45% urea imposed
 ② NPK ratio = 7:3:1 (4:2:1 - ideal)

③ Nitrogenous fertilisers are volatile & contribute to GHG

④ Increase in invasive alien species → impact ecosystem integrity.

⑤ Soil pollution & reduces land productivity

Further, it also has health impacts



Blue Baby Syndrome

Bioaccumulation of contaminants in food chain

Measures required to mitigate the impact of environmental

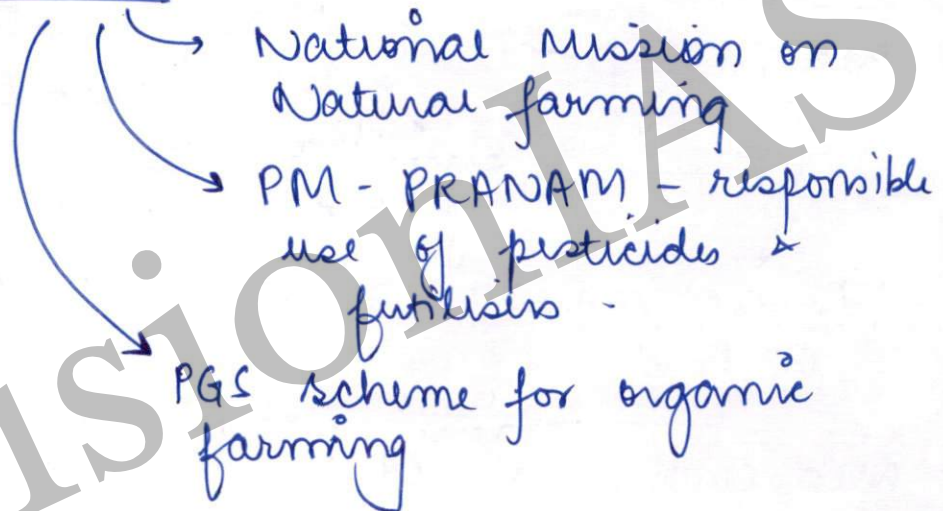
① Promote natural farming & reduced use of chemical fertilisers

② Resource efficiency — through soil health cards

③ Nano fertilisers → less fertiliser pollution
↓
more productivity

- ④ Fertiliser Development & Promotion Body - evidence based policy
- ⑤ Pesticide Management Bill must be passed for institutionalisation of sector.
- ⑥ Agro-ecological balance - cropping pattern according to agro-climate zones to reduce pest attacks

Steps Taken



The sustainable, viable & profitable agriculture requires farmers to be turned into agri-preneurs.

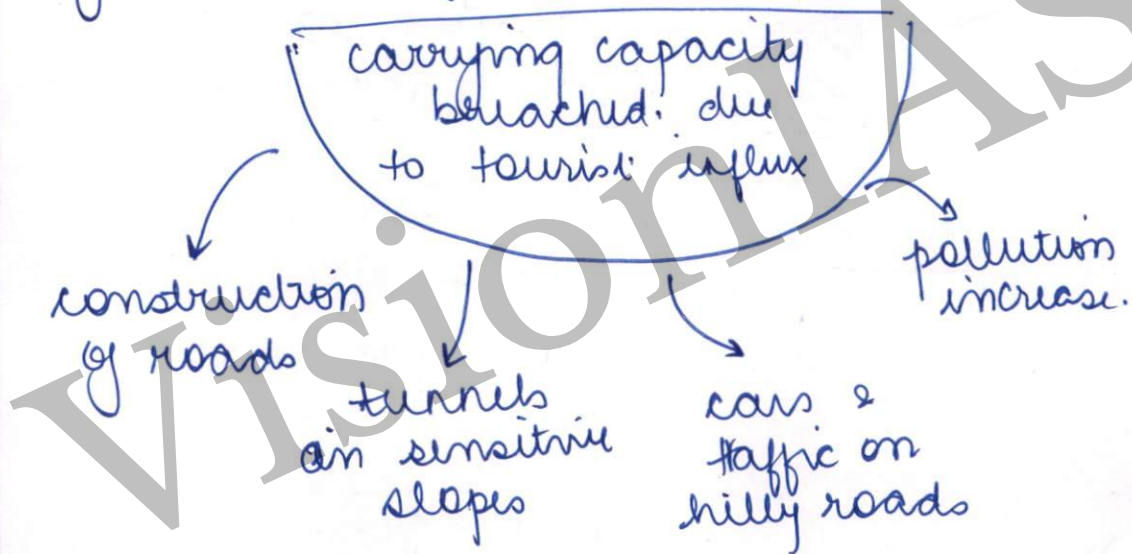
16.

हिमालयी राज्यों में पर्यटकों की बढ़ती संख्या ने उनके पारिस्थितिकीय समावेशन क्षमता को पार कर लिया है, जिसके कारण बड़े पैमाने पर मानव-जनित आपदाएं उत्पन्न हुई हैं। संधारणीय पर्यटन को बढ़ावा देते हुए ऐसी आपदाओं को रोकने के लिए क्या उपाय किए जा सकते हैं? प्रासंगिक उदाहरणों के साथ चर्चा कीजिए। (उत्तर 250 शब्दों में दीजिए)

The growing influx of tourists in Himalayan states has breached their ecological carrying capacity, leading to significant man-made disasters. What measures can be implemented to prevent such disasters while promoting sustainable tourism? Discuss with relevant examples. (Answer in 250 words)

उम्मीदवारों को इस हाशिए में नहीं लिखना चाहिए
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Himalayan states have become a hotbed for disasters due to exceeding the carrying capacity of the hilly area.



Increase in man-made disasters due to tourist influx & ecosystem destruction

- ① Increased landslides due to
- ② Jumel collapse \rightarrow Silkjara
Basket Jumel collapse (Uttarakhand)

- ① weakening of slopes & rocks
↳ triggering downslope movement
eg) Badrinath (Uttarakhand)
- ② Cloudbursts have increased
① eg) Kidamnath (2013)
↳ due to increase in global regional temperature as a result of higher footprint.
- ③ Incidents of GLOFs have risen due to damage to ecosystem.
eg) - Chorabari glacier (2013)
- Justa south Lonak (Sikkim) in 2023.
- ④ Avalanches have risen as a result of construction in snowlands
eg) recently in Gangtok (2023)

Measures required to prevent such disasters & promote sustainable tourism

- ① Hazard zonation mapping of hilly areas → for better planning
- ② Technology be harnessed for prevention eg) Doppler radars

- ③ Adopt the Bhutan model of "high value, low volume" tourism.
- ④ eco-aware tourism be promoted
↳ sustainable attitude of tourists.
- ⑤ Multi-hazard conceptualisation
↳ risk of multiple hazards to plan construction.
- ⑥ Empower local communities through EIA, SIA.
- ⑦ Greater academic linkages ^{eg} Himalayan Universities Consortium for R&D in the area & mapping the sensitive zones.

The geographical marvel, Himalayas, & must be protected before it reaches the tipping points.
Sustainable Tourism is the way forward.

17.

सुपरकंडक्टर्स विज्ञान एवं प्रौद्योगिकी के विभिन्न क्षेत्रों में नवाचार को किस प्रकार बढ़ावा देते हैं? उदाहरण सहित स्पष्ट कीजिए। (उत्तर 250 शब्दों में दीजिए)
How do superconductors fuel innovation in diverse fields of science and technology? Illustrate with examples. (Answer in 250 words)

15

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18.

यद्यपि भारत में लगभग सभी प्रकार के बौद्धिक संपदा अधिकारों को कवर करने वाले कानून मौजूद हैं, फिर भी अनेक प्रवर्तन संबंधी, विनियामक और प्रशासनिक चुनौतियां भारत में बौद्धिक संपदा अधिकारों के व्यावसायीकरण में बाधा उत्पन्न करती हैं। सविस्तार वर्णन कीजिए। (उत्तर 250 शब्दों में दीजिए)

While India has laws covering almost all types of intellectual property rights, numerous enforcement, regulatory and administrative challenges hamper the commercialisation of IPRs in India. Elaborate. (Answer in 250 words)

उम्मीदवारों को इस हद्दिए में नहीं लिखना चाहिए
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India's resident filing of IPRs is merely 44%, though it has increased over time. The issue lies in regulatory & administrative challenges.

Laws related to IPRs in India

→ Copyrights Act 1957

→ GI Act 1999

→ Trademarks Act

→ Patent Act 2005

→ Protection of Plant Varieties & Farmers Rights Act 2001.

However, there are numerous challenges

enforcement

① Inadequate data availability

of Traditional knowledge.

- ② High Bureaucracy rate due to lack of coordination between ministries.
- ③ Global challenges & hurdles
↳ Strict IPR regimes in West.

Regulatory

- ① Lack of trained personnel for investigation ↳ inability to effectively investigate evergreening under Section 3(d) of Patent Act.
- ② Political interference in autonomous functioning of regulators
- ③ Multiple regulatory bodies - GEAC, Environment ministry, MoC&I (Commerce)

Administrative

- ① Poor culture of IPR filing leads to administrative apathy.
- ② Infrastructure gaps.
- ③ Lack of advanced technology with the public officials.

However, India has taken numerous steps to promote & enforce IPR

- ① Recent amendments in Biological Diversity Act, 2002 - empower local & indigenous knowledge.
↳ "Benefit sharing" principle.
- ② NIPAM for IPR related awareness
- ③ TKDL (Traditional Knowledge Digital Library) - record
- ④ Natio sovereign Patent Fund established for increasing IPR investment.
- ⑤ International cooperation
↳ Patent Prosecution Highway
(with Japan)

The IPR regime must be robust to balance commercial interests along with the interests of indigenous knowledge holders.

19.

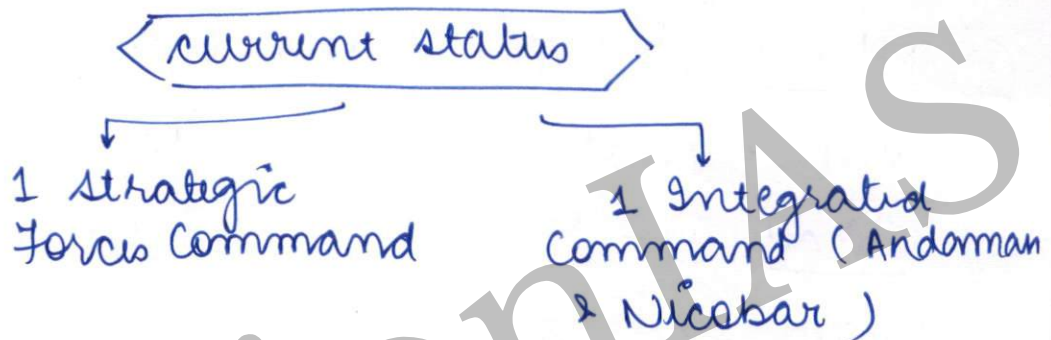
एकीकृत थियेटर कमान का निर्माण करने में सामना की जाने वाली चुनौतियों को ध्यान में रखते हुए, परीक्षण कीजिए कि कमानों का थिएटराइजेशन किस प्रकार तीनों सेनाओं के बीच जनशक्ति और संसाधनों के बेहतर एकीकरण और युक्तिकरण को बढ़ावा दे सकता है। (उत्तर 250 शब्दों में दीजिए)

Keeping in view the challenges in creating integrated theatre commands, examine how the theaterisation of commands can lead to greater integration and rationalisation of manpower and resources among the three services. (Answer in 250 words)

उम्मीदवारों को इस हिसाब में नहीं लिखना चाहिए
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Recently, Inter - Services Organisation Act was passed by Parliament to create Integrated Theatre Command.



Benefits of Theatrization of Commands for integration & rationalisation

GREATER INTEGRATION

- ① Coordination between tri-services for effective defence.
↳ This was lacking as seen in 1962 war.
- ② Resource optimisation between

army, navy & Airforce.

↳ reduce costs due to overlapping.

③ Early & timely execution of orders & mobility of personnel due to cohesiveness & better chain of command.

④ Needed in the 2.5 Front war (Ex- CDS Bipin Rawat)

⑤ The Hybrid warfare requires collective action from land, air & water.

⑥ Better determination of Technological needs & equipments required.

RATIONALISATION OF RESOURCES & MANPOWER

① Tri services exercise - skills of all 3 services to manpower.

② Coordination would reduce unplanned increase in of manpower in 1 force at the cost of other.

③ Prevent duplication & overlap of equipments & Infrastructure

However, there are certain challenges in creating theatre commands.

- ① Huge resource requirement initially (India's defence Budget is merely 2% of GDP)
- ② Requires adequate data & robust infrastructure for planned.
- ③ May lead to dominance of the head of command → impact work culture.
- ④ Land acquisition issues & issues to local population, eg. Tribal in Andaman.

Way forward lies in

- ① Coordination between all 3 services & Defence, finance ministry.
- ② Cost-Benefit Analysis of Theatrical Commands.
- ③ carving a National Security Doctrine.

Sherketkar Committee & Kargil committee recommendations must be thoroughly reviewed before setting up theatre commands.

सीमावर्ती गांवों को न केवल भौगोलिक दृष्टि से बल्कि सुविधाओं के मामले में भी प्रथम गांव मानना, सीमा सुरक्षा बढ़ाने की एक प्रमुख रणनीति हो सकती है। विवेचना कीजिए। साथ ही, इस संबंध में सरकार द्वारा किए जा रहे उपायों पर भी प्रकाश डालिए। (उत्तर 250 शब्दों में दीजिए)

Treating border villages as first villages not just geographically but also in terms of facilities can be a key strategy for enhancing border security. Discuss. Also, highlight the measures being taken by the government in this regard. (Answer in 250 words)

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उम्मीदवारों को इस हार्शिस में नहीं लिखना चाहिए
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India shares a long border with International boundary which has proven to be a hydra headed challenge in the backdrop of less developed border villages.

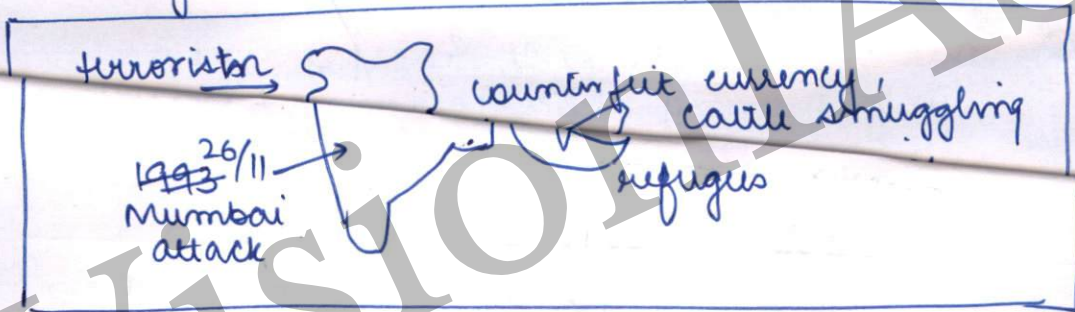


Fig Border areas & challenges.

Border villages must be developed geographically

- ① Prevent illegal ^{immigrants} refugees from entering through porous ^{riverine} borders of Bangladesh.

② Prevent smuggling of goods
eg > 2 Gore cattle smuggled across Bangladesh

③ India lies in the drug transit corridor
Golden Triangle (South-east) ←
Golden Crescent (West & South Asia)

④ Pakistan's state sponsored terrorism exploits the undemarcated territories → terrorists enter border villages

↳ eg recent attacks in Rasi Kathua

⑤ Coastal surveillance to prevent illegal entry eg during 26/11 attack

→ internal security

① Villagers used as overground workers due to development deficit

② Increase # in development brings harmony & reduces radicalisation
eg terror attacks in J&K reduced.

③ Political empowerment of border villages increase local self govt. & region based policies

④ Reduce escalation of conflicts due to ethnic ties across borders eg seen in

kuki-meitei conflict in Manipur.

- ⑤ Increase social capital & education
↳ prevents propaganda.

Measures taken by govt

A For physical security

- ① TIMBS ← Thermal Imaging devices
Heating post.
Fencing
- ② Integrated Check Post (ICP) along Bangladesh border
- ③ Responder Robots, DSDBo road.

B For facilities in village border

- ① Vibrant Villages program along western border.
- ② Nai Udam, Nai Manzil, Padho Pradesh → more educated border villages

③ Socio-economic development

↓
Bogibel bridge,
STINER (North East)

↓
Sagarmala
↓
Coastal
Communities
development

↓
Back to
Villages
program
(J&K)

Thus robust border management is essential for internal as well as external security of India

SPACE FOR ROUGH WORK

REAL

VisionIAS