



VISIONIAS

INSPIRING INNOVATION

ABHYAAS MAINS

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 उपरान्त 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. : 01428670

अभ्यर्थी का नाम/Name of Student : PRATEEK YADAV

माध्यम: हिंदी/अंग्रेजी
Medium: Hindi/English

ENGLISH

तारीख
Date

25/8/24

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

केंद्र
Centre

DEHRADUN (011)

निरीक्षक के हस्ताक्षर
Invigilator's Signature

Prateek

	महत्वपूर्ण अनुदेश 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।	Important Instructions 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.
1	(क) अपना पंजीकरण सं. एवं अन्य विवरण केवल प्रश्न-सह-उत्तर पुस्तिका (क्यू.सी.ए.) में उम्मीदवार के लिए निर्धारित स्थान पर ही लिखें। (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।	(a) Write your Registration Number and other details only in the space provided in the Question-Cum-Answer (QCA) Booklet for candidates. (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
2	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।	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.
3	परीक्षक को प्रत्यक्ष/अप्रत्यक्ष रूप से कोई भी प्रार्थना/धमकी भरी बातें न लिखें।	Do not make any direct/indirect appeal/threat to the examiner.
4	उत्तर अस्पष्ट अथवा गंदी लिखावट में न लिखें। इस प्रकार के उत्तर का मूल्यांकन नहीं भी किया जा सकता है।	Do not write answers in bad/illegible handwriting. Such answers may not be evaluated.
5	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।	Write answers in ink only. Do not use pencil for writing the answers. However, pencil may be used for drawing diagrams, sketches, etc.
6	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।	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.
7	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।	Write answer at the specific space (right below the question) only. Answers written elsewhere at unspecified places in the booklet shall not be evaluated.
8	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।	If you wish to cancel any work, draw your pen through it and write "Cancelled" across it, otherwise it may be valued.

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)					



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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 नही लिखना चाहिए
Candidates must not write on this margin

Food Processing industry is growing at CAGR of 9%, estimated to reach \$ 535 billion by 2025.

→ Agricultural Prosperity [Dalwai Committee]

Significance of Food Processing Industry

→ Nutritional Security

→ Exports of food products

→ Millet Revolution eg Nutri Hub of IIMR Hyderabad

This has led to Challenges in Food Safety :-

① Inadequate food testing labs

② Presence of Micro-plastics (as highlighted by Toxics Link NGO)

③ Lack of inspection in Warehouses

④ Warehousing facilities deficit

eg Everest Masala had toxic chemicals due to Warehouse

⑤ Poorly developed techniques to identify new bacteria in food due to climate change (permafrost thawing)

⑥ Unable to Match the pace of food processing growth with regional testing infrastructure
eg Lack of Testing labs in North-east India

This needs following Measures -

① Self-Regulatory Mechanism of food processing industries for quality check

② Implement "Sew Qual" standards of quality in value-added food products

③ Empower FSSAI with powers of civil court & enforcement of Food adulteration ⇒ handle cases like Batangali adulteration 2024 well

This will uphold Health Security Article 47

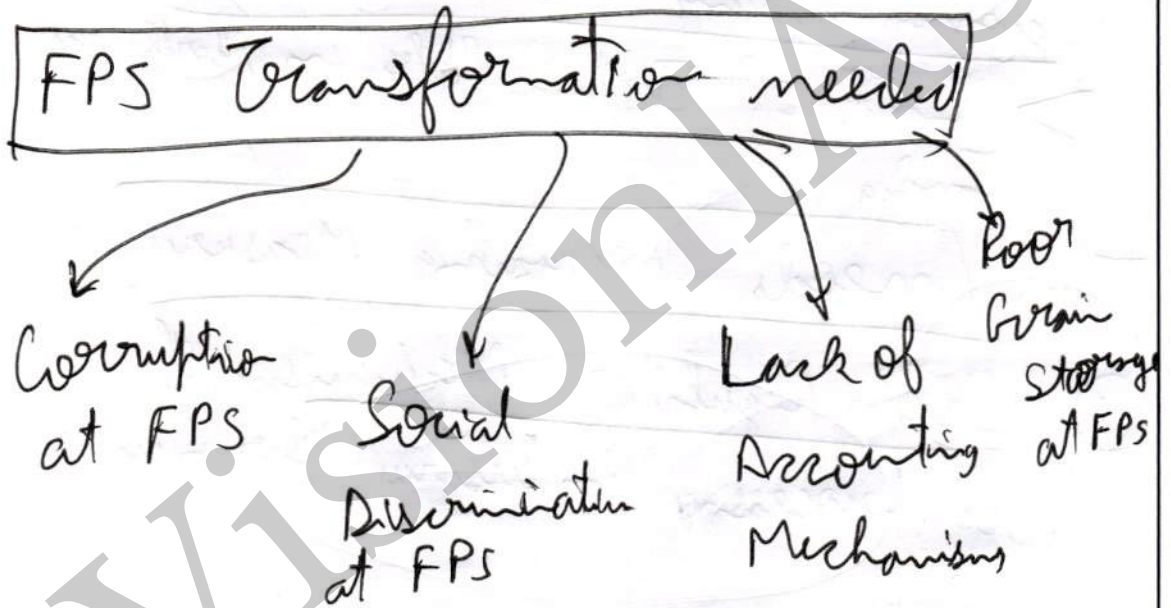
2.

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 कक्षा में नहीं लिखना चाहिए
Candidates must not write on this margin

PDS system distributes foodgrain to ensure SDG-2 & health, nutritional security.



Transformation Measures Needed

- Tech integration
- AI-based tracking of grains
- Interoperability (One Nation, One Ration Card)

→ Blockchain integration to
ensure fair transactions
& pricing
→ CCTV cameras to prevent
pilferage losses

Shanta Kumar Committee

suggests ⇒ Decentralised govern-
-ment

⇒ Private Sector FPS Shops

⇒ Decentralised Tracking of
grain distribution

Challenges

↳ Resistance from FPS owners
↳ State govt. apprehensions

FPS transformation essential
for India to uphold its
nature of Welfare State (Ans 38)

3.

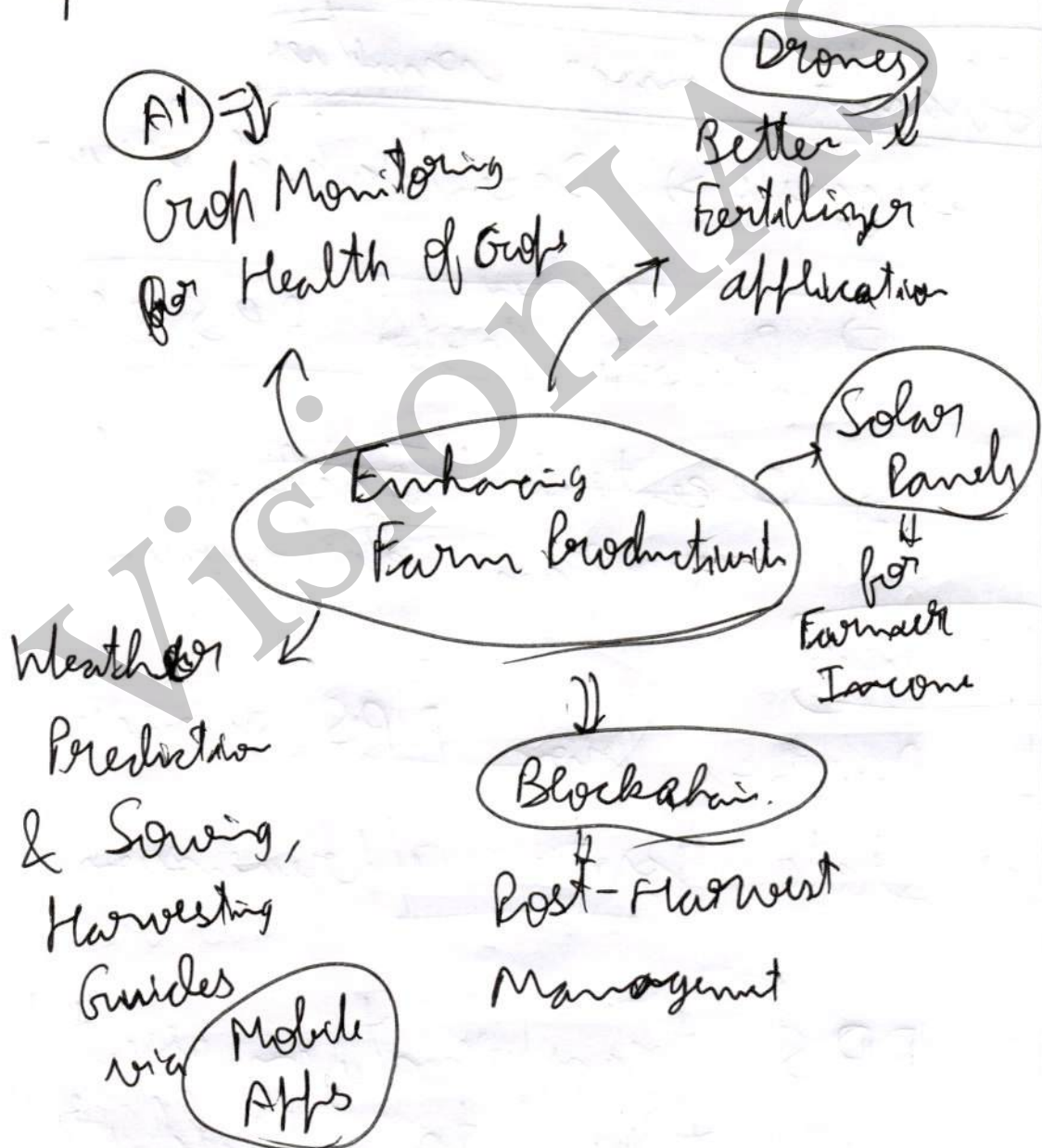
भारत में एग्रीटेक स्टार्ट-अप्स किसानों की कृषि उत्पादकता एवं बाजार पहुंच बढ़ाने में किस प्रकार मदद कर रहे हैं? (उत्तर 150 शब्दों में दीजिए)

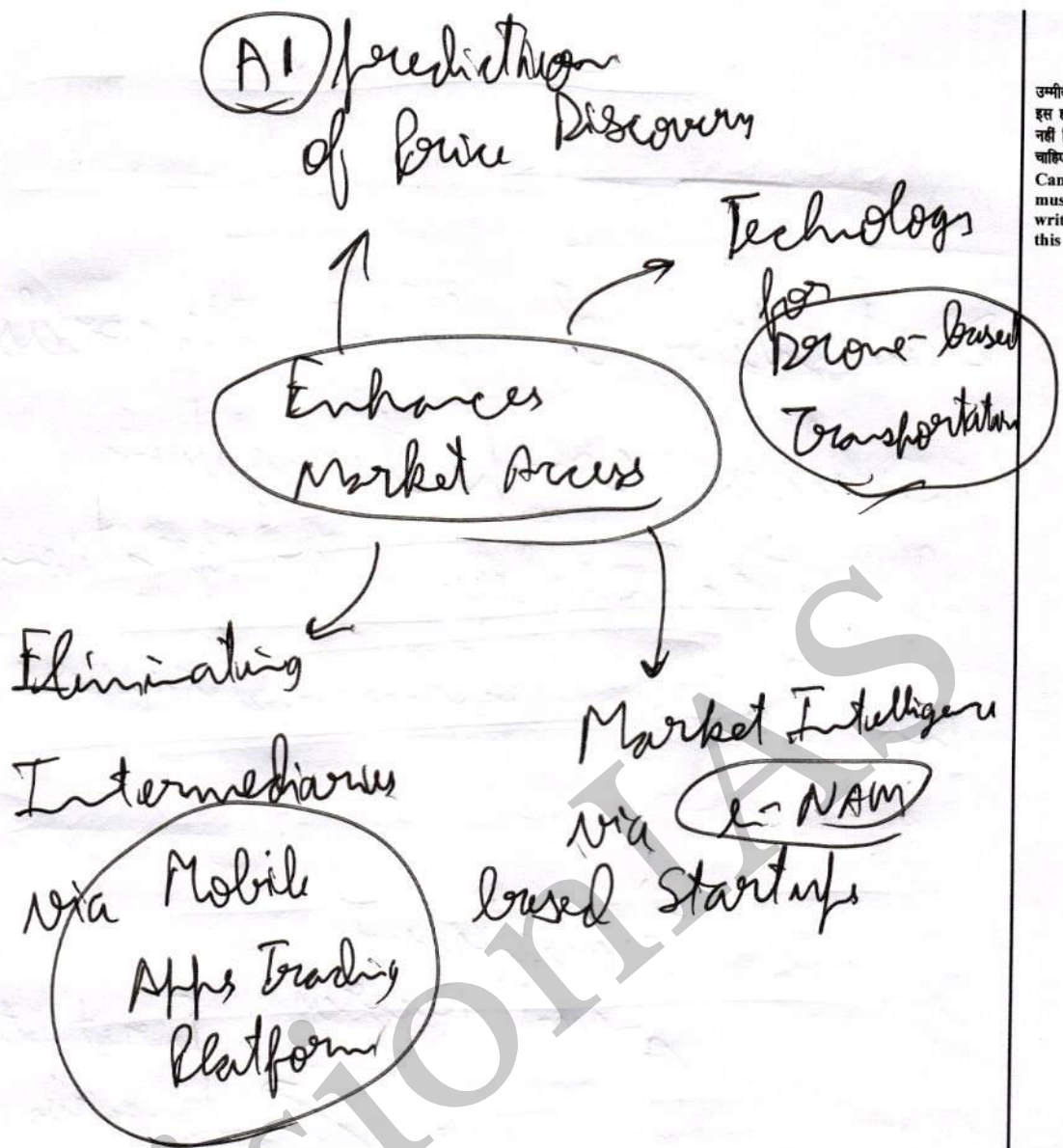
How are agri-tech startups in India helping farmers in enhancing farm productivity and market access? (Answer in 150 words)

10

उम्मीदवारों को इस क्वेश्चन में नही लिखना चाहिए
Candidates must not write on this margin

Agri-Tech startups involve
tech to upgrade Agri
productivity





Agri-Tech forms part of
"Secondary Agriculture" &
is critical for Doubling
Farmer's Income (Dalwai
Committee)

4.

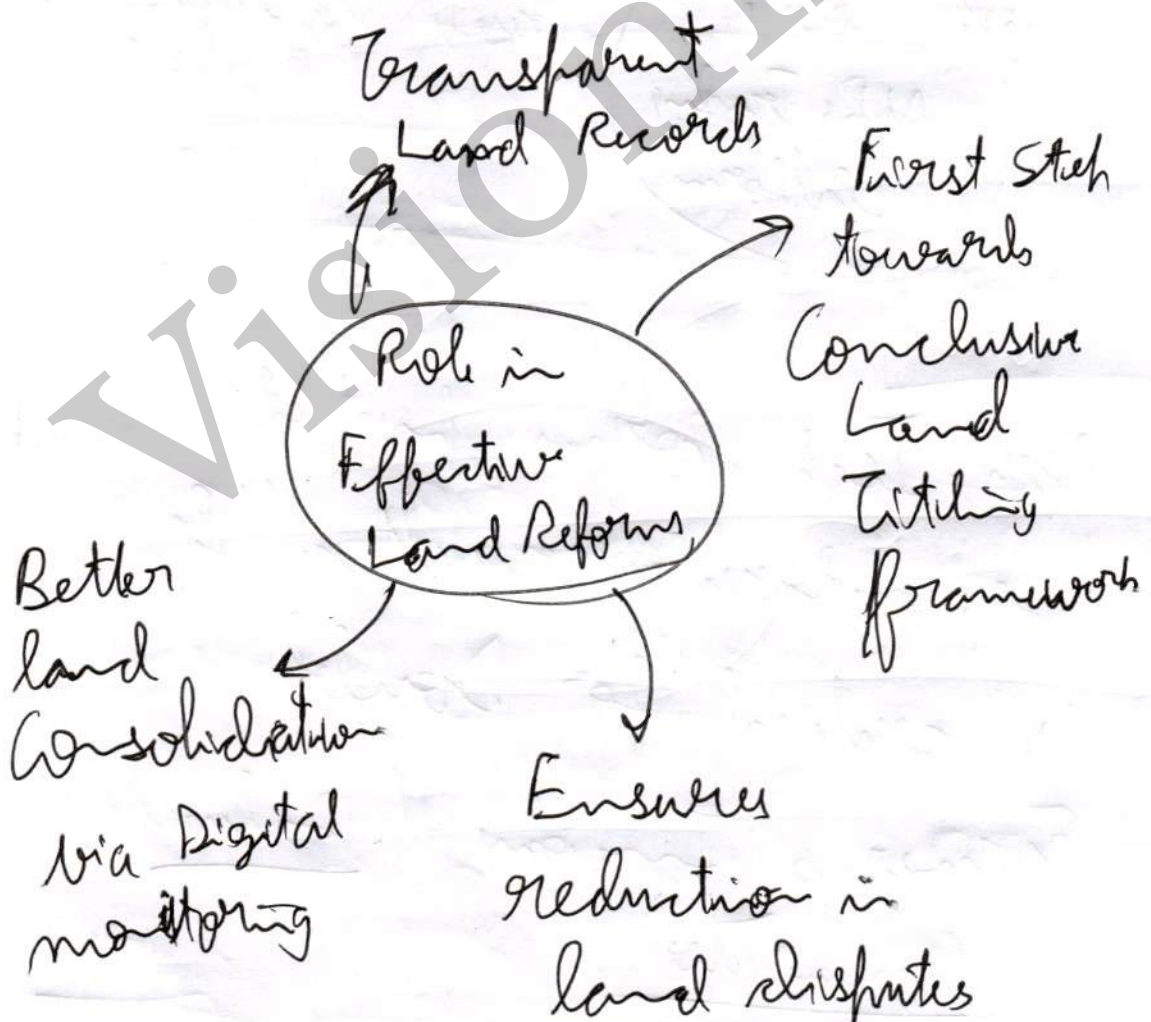
भारत में भूमि सुधारों के प्रभावी कार्यान्वयन में भूमि अभिलेखों के डिजिटलीकरण की भूमिका पर चर्चा कीजिए। (उत्तर 150 शब्दों में दीजिए)

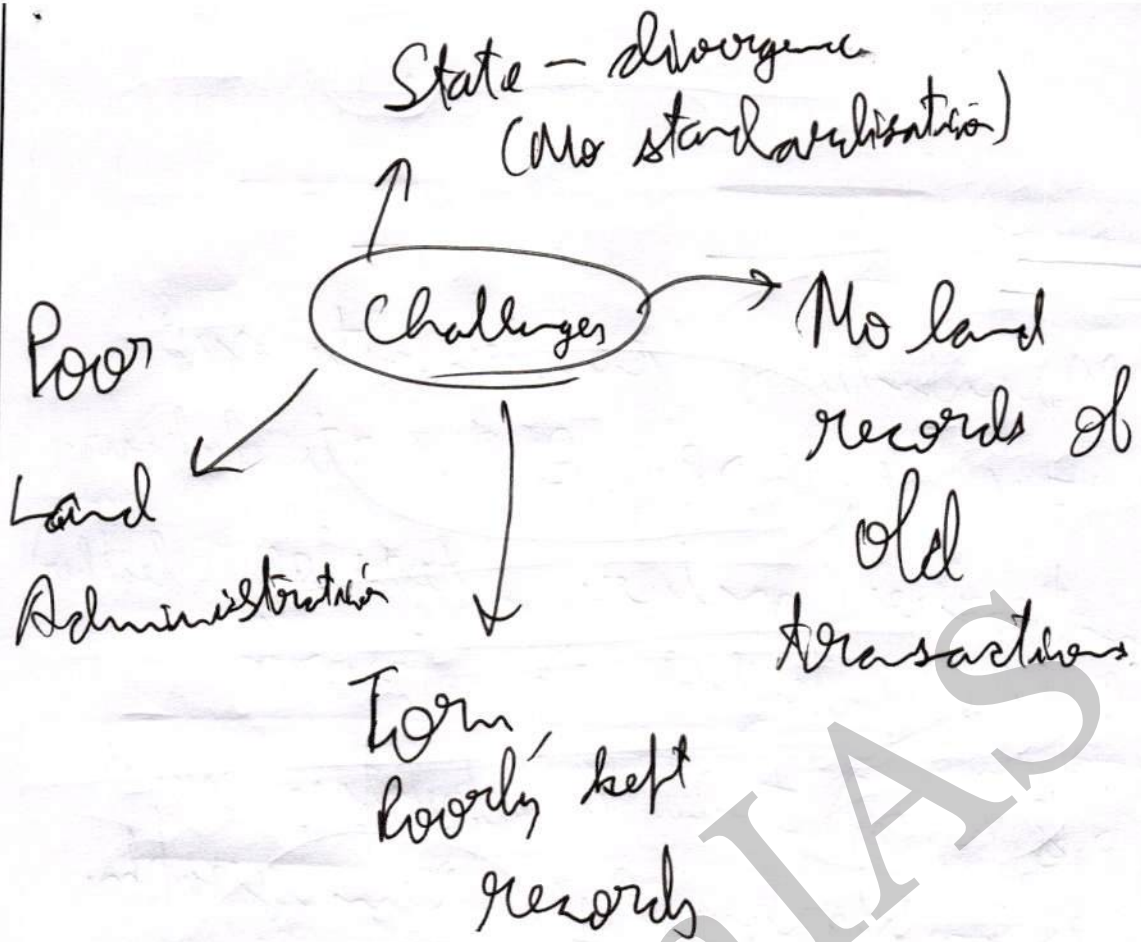
Discuss the role of digitization of land records in the effective implementation of land reforms in India. (Answer in 150 words)

10

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

Digitization of land records involves computerization & technology integration in land administration





5.

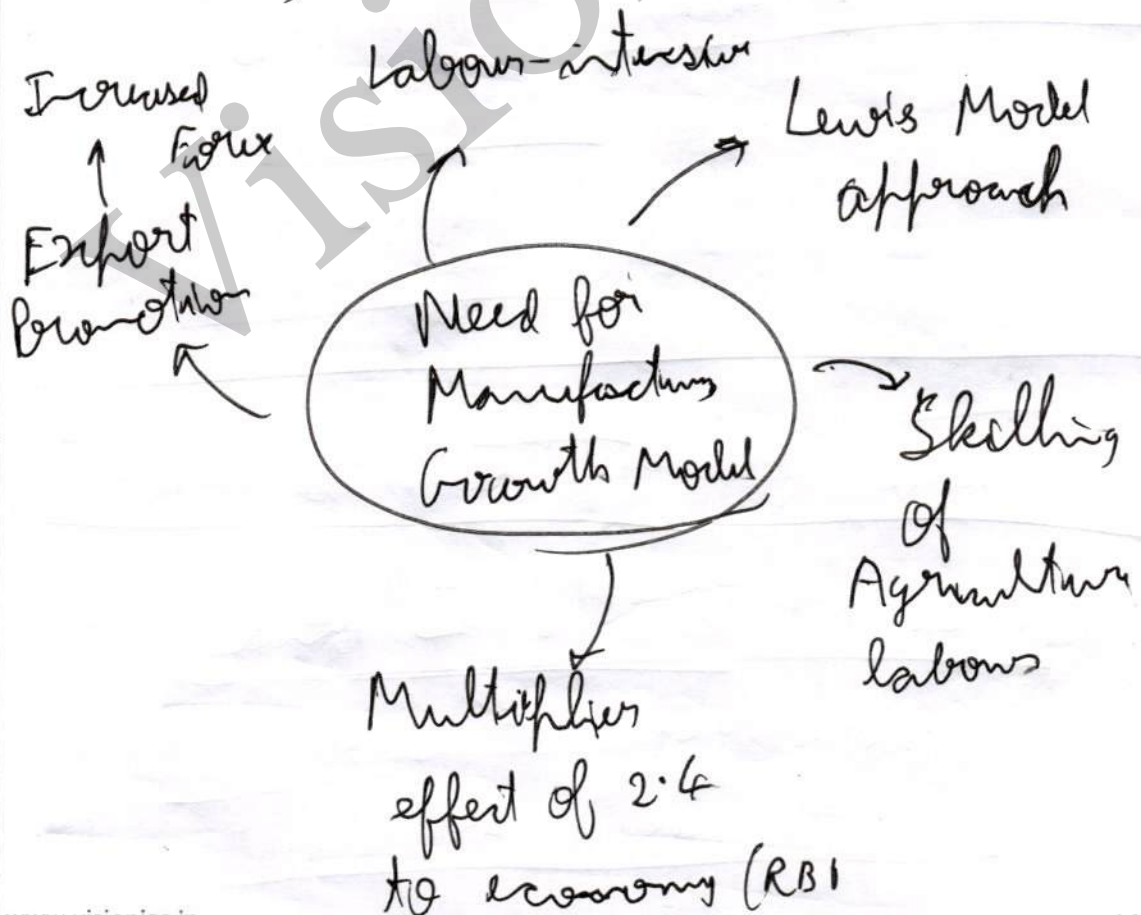
भारत को अपने जनसांख्यिकीय लाभान्श का पूर्ण उपयोग करने और आर्थिक विकास में तेजी लाने के लिए एक विनिर्माण-केंद्रित विकास मॉडल को अपनाने की आवश्यकता है। विवेचना कीजिए। (उत्तर 150 शब्दों में दीजिए)

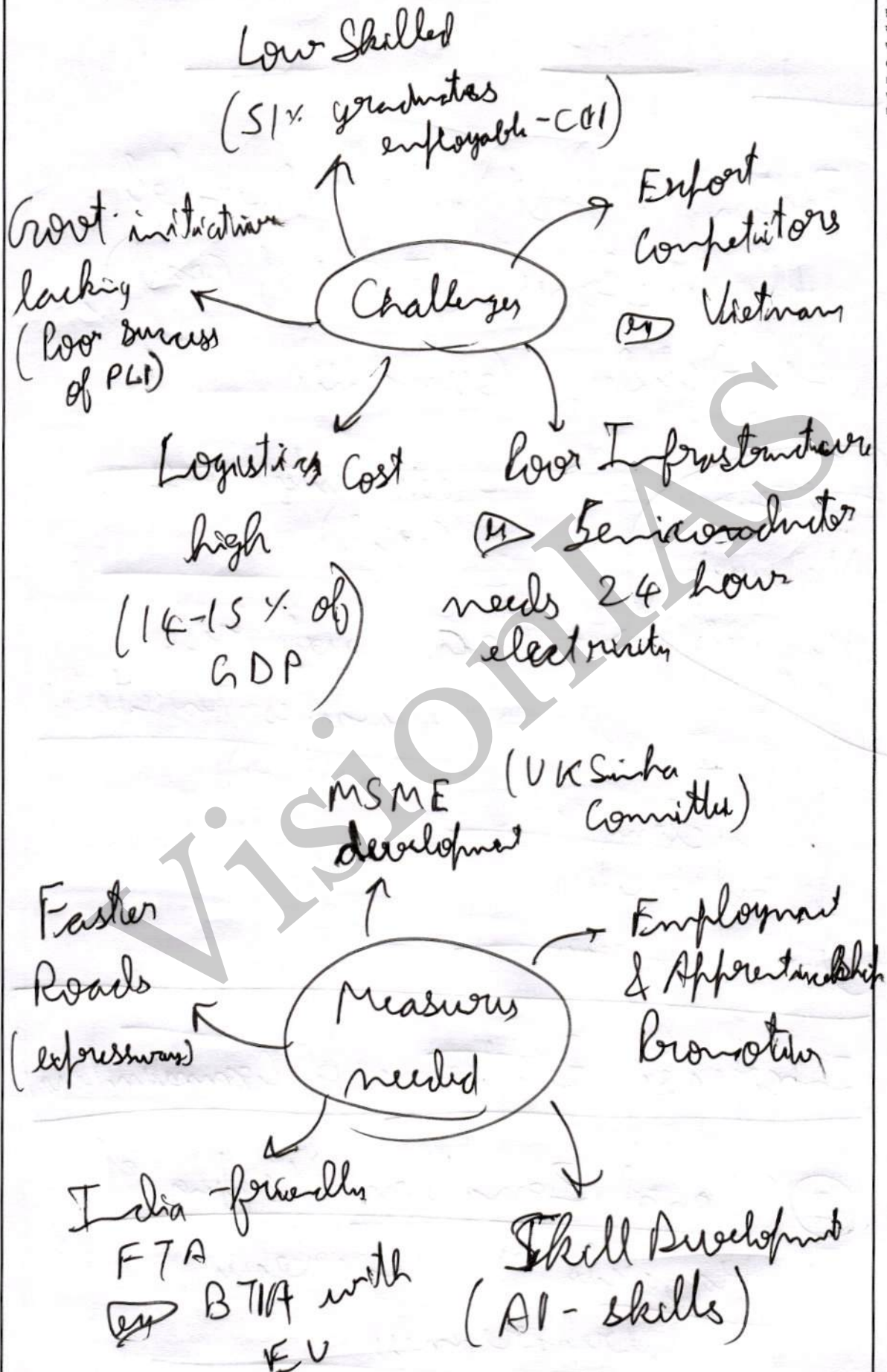
To fully exploit its demographic dividend and accelerate economic growth, India needs to adopt a manufacturing-led growth model. Discuss. (Answer in 150 words)

10

उम्मीदवारों को इस हार्शिए में नही लिखना चाहिए
Candidates must not write on this margin

Manufacturing contributes just 17% of GDP. But, its labour-intensive nature (textiles, leather) holds potential to absorb 68% of India's population which is in working Age (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

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

Indian Coast is Vulnerable
to Cyclones (75% of Coast),
Landslides, Tsunamis

Growing
Natural
Hazards

→ Biodiversity loss
(Corals)

→ Sea level rise
(Maldives threatened
existence)

↓
Cyclone
extremities

↓
Storm surges

Increase Resilience of Communities

① Land Zonation Mapping of
Hazards ⇒ increases
preparedness

② Review CRZ rules to
increase gap from High
Tide line for Infra Development

③ Mitigation via Sea-friendly
Blue economy ex) Sea weed
farming

④ Adaptation via "Managed
Retreat" of Habitats
ex) Shift ~~of~~ of Indonesia
Capital to Nusantara

⑤ Disaster-resilient Infra
↳ ex) Traditional Homes
Architecture

Coastal Communities safeguard
critical to achieve 'Sukha
Sukata, Sukha Vikas'

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 हाशिए में नहीं लिखना चाहिए
Candidates must not write on this margin

Green Credit Initiative is a Voluntary Market initiative distributing credits in lieu of sustainable development projects.

Extending Beyond Carbon Management

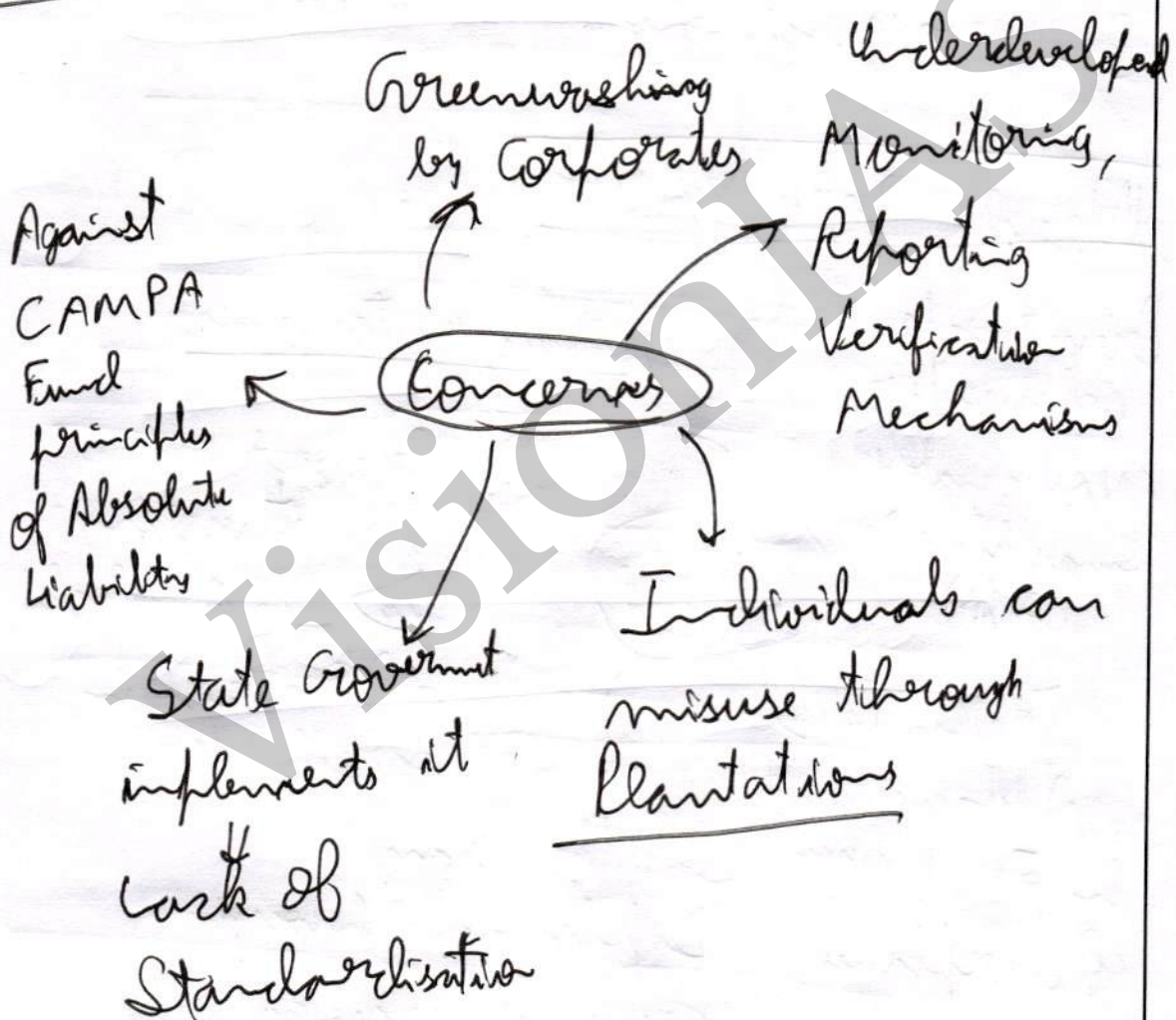
- 1) Includes → Water Conservation programmes
- 2) Afforestation Program
- 3) Allows CSR to offset Green targets via NGOs
- 4) Waste management programs like Bio Mass, Sewage Treatment
- 5) & Pollution Mitigation Programs like Smog guns purchase etc.

It includes carbon Mitigation,
biodiversity Conservation & Pollution
abatement $\Rightarrow$ targets Triplic Elements

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

Crisis

Challenges & Concerns



Yet, Green Credits has positive
future to secure 'Ranchamrit
of India

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

उम्मीदवारों को इस हाशिए में नहीं लिखना चाहिए
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NAVIC is India's indigenous Satellite Navigation system with 4 geostationary & 3 geosynchronous satellites

Need for NAVIC

Prevent Data Colonisation

(NAVIC enabled Smartphone chips)

Strategic Autonomy

Need

Prevent something

USA blocked GPS access in Kargil War

Technological Advancement in 5G, Navigation of airplanes

South Asian Diplomacy through regional navigation facilities

Challenges for NAVIC

- (I) Slow progress - only 7 satellites deployed till now
- (II) Limited reach:
just 1500 km beyond India's ~~border~~ borders
- (III) Redundancy with Russia's GLONASS, USA's GPS leads to apprehensions of Arms Race

Nevertheless, we need NAVIC to secure India's sovereignty & as "Net Security Provider" of South Asia.

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 कक्ष में नहीं लिखना चाहिए
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Recently, Amit Shah (Home Minister) said

"Money laundering has shifted from Hawala to Virtual Digital Assets"

in the Non Money for Terror Conference (NMFT)

This shows the New Frontier of Global Money laundering as being cyber-enabled

Cyber Financial Crimes as New Frontier

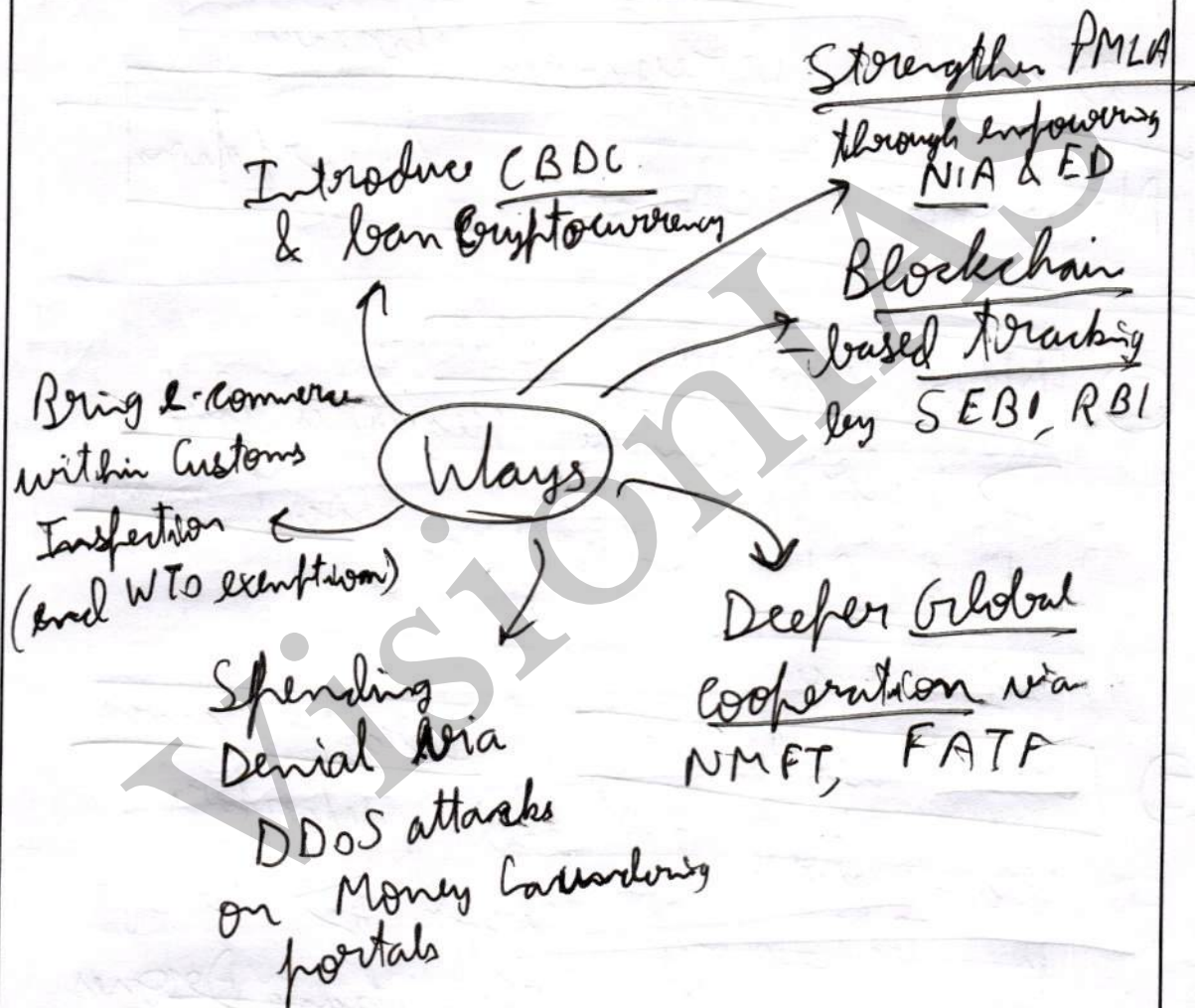
(I) Rise of Mule Accounts to launder money through innocent civilians via UPI

(II) Non-Fungible Tokens ⇒ difficult to fix valuation ⇒ scope for integrating "dirty money" back into economy

(III) Identity Theft ⇒ use other's bank accounts to launder money using Deepfakes Voicefakes

(IV) Crypto Currency $\Rightarrow$ Decentralised &
no regulation $\Rightarrow$ difficult to track
crypto transactions

Ways for government to address



Money laundering is global
phenomena which requires
"One Mind One Approach"
of whole world.

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इस क्राशिए में
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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 क्षेत्र 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)

Technology is the new focus of military modernisation in this era of "Greyzone Warfare".

Need for Technology Absorption

(I) New Frontiers of War :

(a) Cyber Warfare requires deep-tech AI integration, social media intelligence

(II) Present developments of Israel-Hamas War shows 21st century Warfare is Technology Warfare eg Use of Barak Missiles, Kamikaze Drones by Israel

(III) Cost-efficiency → presently 80% of defence expenditure of India is on operational & personnel overhead → this

jeopardises Indian security in
Technology-intensive battlefield
like Technical Intelligence, AI-controlled

Command & Control of Missiles

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इस कक्ष में
नहीं लिखना
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Challenges faced by India in Technology
Absorption

(I) Poor Domestic R&D paradigm
⇒ increased reliance on technology
transfer by USA, Israel, France

Ex) GE414 engine could not be
developed indigenously

(II) Weaponisation of technologies like
Semiconductor Chips ⇒ threatens
India's Military-Tech integration

(III) Resistance from Human Personnel
Ex) Agriveter protests against Techno-
logy replacing humans

(IV) Violation of Geneva Conventions as
AI-led warfare raises issues of
liability, human rights.

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

North-eastern region contributes just 8% to India's GDP showing industrial & trade backwardness of region.

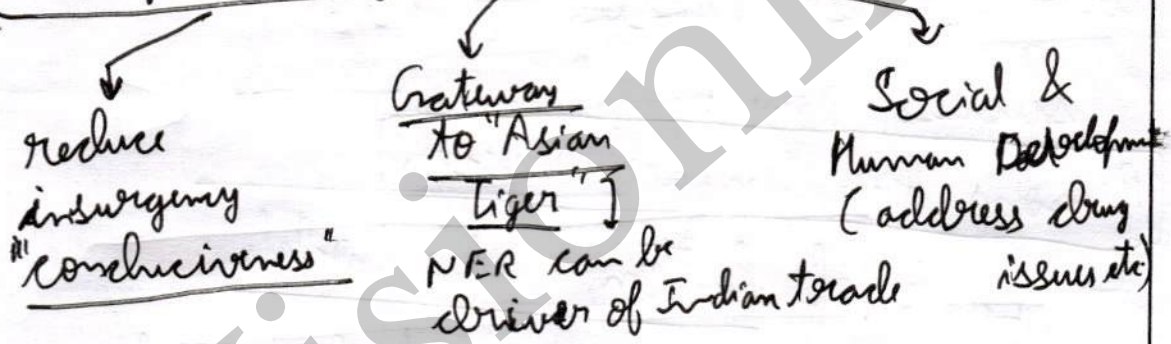
Issues faced in NER industrialisation

- (I) Fragile ecology ⇒ threatens stability by large-scale projects eg Arunachal Dam
- (II) Insurgencies & "Ungoverned Spaces" reduces investment potential of NER
- (III) Complex Terrain ⇒ Difficult to establish spacious warehouses, manufacturing industries
- (IV) Developmental Differences ⇒ NER tribes don't have industrialisation as a concept in their vision of development ⇒ leads to local resistance

⑤ External crises like Myanmar, China, Bangladesh instability reduces scope of peaceful industries in NER

⑥ Lack of Human Resources ⇒ poor technical skills of youths in NER
⇒ due to lack of technical institutes (except IIT Guwahati)

Significance of NER industrialisation



Measures Taken to tackle these Issues

① Developmental ⇒ PM-DEVINE for

social & physical infrastructure development

→ Vibrant Villages Program in Arunachal

② Social ⇒ North-east Entrepreneurship Development Council (NEEDC) to harness youth potential

③ Law & Order → AFSPA to secure
peace & hence attract investment

④ Bilateral Cooperation -

↳ Connectivity : eg Agartala - Akhaura Road
Link to faster trade
from Tripura

↳ Security : eg Op. Sunrise to
comb out insurgency via
Myanmar

However, these Measures have partial
success only:

Reasons for limited Success

- ↳ Lack of Bottom-Up Models
- ↳ Cottage Industries not focussed
- ↳ Peace Talks not comprehensively
implemented eg NSCN Peace talks stalled

Way Ahead → Involve Communities via
"Vocal for Local"

→ Climate-friendly development
programmes like "Tree Bank" of Meghalaya

This upholds principle of
"Sabka Saath, Sabka Vikas"

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 क्राशिए में नहीं लिखना चाहिए
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Climate Change is exacerbating agricultural crisis (IPCC $\Rightarrow 1.2^\circ\text{C}$ temperature already risen by 2023) via not just global warming but also Water Scarcity

Crisis on Agriculture due to:

① Climate Change $\rightarrow$ Crop fires increasing
 $\rightarrow$ Extreme Rainfall Patterns
reducing Crop Productivity
 $\Rightarrow$ Wheat Productivity 13% decrease
 $\rightarrow$ Rising Pest attacks $\Rightarrow$ Locust attacks on Maize

② Water Scarcity $\rightarrow$ Reduced Rice Productivity in Punjab
due to Depleting Groundwater
 $\rightarrow$ Rising Irrigation Costs $\Rightarrow$ farmer debts rising $\Rightarrow$ farmer suicide
Reducing Soil fertility $\Rightarrow$ lack of soil microbes due to low Moisture

Micro-irrigation systems aim to balance

agriculture imperatives with water & Climate Crisis

उम्मीदवारों को इस इच्छा में नहीं लिखना चाहिए
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Micro-Irrigation: Contributes to Sustainable Agriculture

- (I) Reduces Water Wastage via Drip Irrigation $\Rightarrow$ mitigates Water Crisis
- (II) Targeted Application in Rhizosphere $\Rightarrow$ reduces Heat Stress of Crops.
- (III) Overhead Spraying via Drones cools down crop atmosphere
- (IV) Potential for Fertigation through Piped irrigation $\Rightarrow$ increases crop productivity, reduces Water Demand
- (V) Increased Soil Absorption & Nutrient-use efficiency due to less Agriculture Runoff due to less Water application
- (VI) Extends Cropping Season in Drought - seasons via Precision Agriculture

→ sustainable agriculture even in droughts

उम्मीदवारों को इस खण्ड में नहीं लिखना चाहिए
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Yet Comprehensive approach needed for Sustainable agriculture apart from Micro-irrigation



Climate Change & heatwaves can reduce Agriculture productivity by 30% by 2050 (FAO Report 2021). Thus, urgent steps including Micro-irrigation needed to uphold SDG 2 (food security) as well as "Doubling Farmers' Income" goal.

13.

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

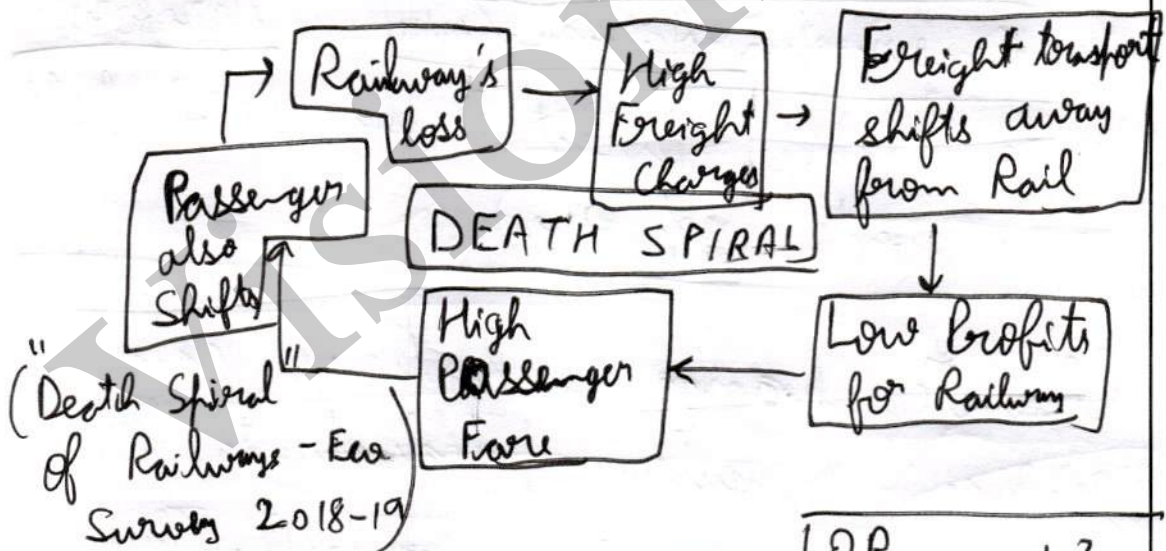
What strategies can be adopted to overcome the issues pertaining to freight transportation in the Indian Railways and increase its share in the domestic freight? (Answer in 250 words) 15

उम्मीदवारों को इस कक्ष में नहीं लिखना चाहिए
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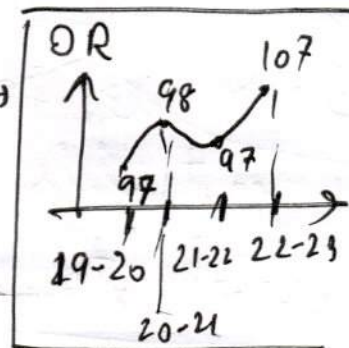
Currently, just 26% of freight modal mix is with Railways.

Issues in Freight Transportation by Railways

- ① Cross-Subsidization ⇒ freight charges increased to subsidize passenger travel



- ② High Operating Ratio (OR) ⇒
↳ Reduces profitability of Railways ⇒ Increases Freight Fare



- ③ Right of Way to passenger trains over freight trains ⇒ delayed freight consignments

④ Lack of Multi-Modal Transport

integration $\Rightarrow$ poor Containerisation,
issue of feeder networks from railway
stations

⑤ Track Modernisation & Standardisation

not done $\Rightarrow$ Broad gauge - Narrow gauge disconnect

Strategies to Overcome the Issues -

① Fare $\Rightarrow$ reduce cross-subsidization burden on freight

② Private Train Operators $\Rightarrow$ increases transport efficiency (Risek Deloroy Committee)

③ Track Standardisation

$\hookrightarrow$ uniformize gauge width to reduce trans-shipment costs

④ Dedicated Tracks to Industrial Clusters $\Rightarrow$ reduces handling costs
 $\Rightarrow$ increase freight from railways

⑤ Signals & Communication like Track interlocking, KAVACH installation to reduce rail accident apprehensions

(VI)

Railway Station Facilities

like Weight

Measurement, Cargo transport feeder
~~less~~ trucks at stations through
"Amrit Bharat Railway Station Scheme"

उम्मीदवारों को
इस हिसाब में
नहीं लिखना
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Why Railway freight needs to be increased

Environmental
friendly $\Rightarrow$ Rail

Transport reduces
GHG emissions by
68% compared to Roads

Cost-friendly

$\Rightarrow$ Rail transport
cheaper than Road
or Air

Increasing rail freight will
uphold goals of National
Logistics Policy 2023 to reduce
Logistics cost to 8-9% of GDP.

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)

15

As per Climate Performance Index (Germanwatch) $\Rightarrow$ India is ranked 8th in Renewable energy strides.

This acknowledges India as frontrunner in Renewable energy transition:

$\rightarrow$ Achieve Parichay

Significance of Renewable

Energy Transition for India

$\rightarrow$ Reduce Import Dependence (85% of Oil imported)

$\rightarrow$ Energy Security (India is rich in Solar resource)

Green Economy

(3.4 crore green jobs by 2047 - JP Morgan Chase)

~~Factors~~ $\rightarrow$ Achieved NOC of 40% energy mix through non-fossils before target

Success of India's Renewable Energy Transition

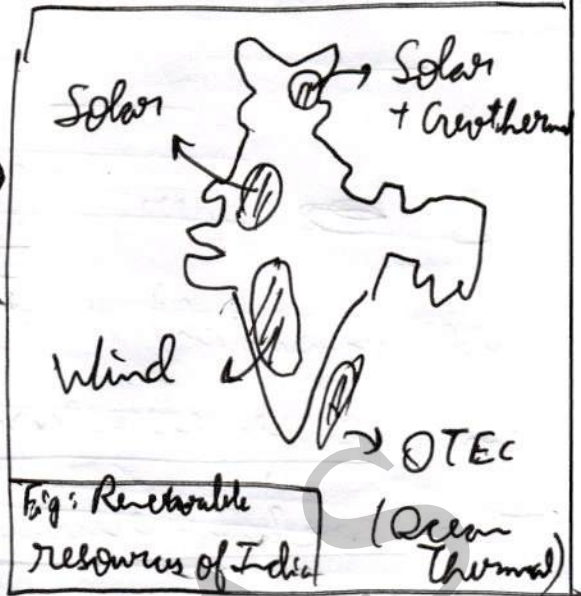
$\rightarrow$ 180+ GW through Renewable energy

$\rightarrow$ R&D programmes on Renewable energy (Green Hydrogen Mission)

Factors Aiding India in Impressive Strides

उम्मीदवारों को इस कक्ष में नहीं लिखना चाहिए
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- ① Resource - Rich $\Rightarrow$
 - $\hookrightarrow$ 780 GW potential of Wind Energy at 120 m shows resource richness



- ② R & D ecosystem $\Rightarrow$ India is in top 10 on green technologies patents (WIPO)

- ③ Government Policies
 - $\Rightarrow$ PM-KUSUM, PM-Surya Ghar

$\Rightarrow$ Bio CNG Plant in Indore from Solar

$\Rightarrow$ National Offshore Wind Energy Policy 2016

- ④ Global Cooperation
 - $\Rightarrow$ ICET with USA for clean technologies co-development

Factors Aiding India as Frontrunner in Global Energy Transition

उम्मीदवारों को इस कक्ष में नहीं लिखना चाहिए
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① Institution-builders → India launched multiple initiatives eg Lead IT, CDR1, International Solar Alliance (ISA), Global Green Credit Initiative

② India's Culture → Vedic tradition is nature-friendly; Gandhi's message to world was "fungal living"
→ reflected in "LiFE" by PM Modi

③ Climate Finance by EU, USA to India
eg EU's PGII initiative (with G-7) for green infra

Yet, there are challenges for India:

Lagging behind in

25-3 billion tonnes

Carbon Sink commitment

Allegations of Greenwashing

on Indian investments in Africa

Coal Dependence

51% of energy mix still from coal

We need Bottom-up approach for faster Renewable energy transition, as can be emulated from

"All-solar" initiative of "Pelli Pantham" (Tel)

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)

Agriculture runoff is when the chemicals (fertilizers, pesticides) flow downstream into nearby water bodies $\Rightarrow$ causes Water Pollution & Soil Pollution.

Agriculture Runoff: Contributing to Pollution

- ① Nitrogen fertilizers (Urea) $\Rightarrow$ applied in excess $\Rightarrow$ remains un-absorbed by soil $\Rightarrow$ flows into ponds in rains $\Rightarrow$ Causes Eutrophication of ponds
- ② Pesticides (DDT) $\Rightarrow$ flows due to Soil hardening ('usar' soil)
 $\hookrightarrow$ kills Soil Microbes $\Rightarrow$ Soil Pollution
- ③ Emissions of Methane, Ammonia from fertilizers $\Rightarrow$ air pollution

& Global warming

- ④ Biodiversity loss by Agriculture
Chemicals $\Rightarrow$ Vulture deaths by
ketoprofen $\Rightarrow$ disturbs ecology
 $\Rightarrow$ Causes "Ecological Pollution"

Measures to be taken to Mitigate Agriculture Runoff Impacts

① At Farm level -

① Reduce Fertilizer application
through techniques like
"fertigation"

② Replace Chemical Fertilizers
with Organic manures $\Rightarrow$ reduces
biodiversity loss & pollution

③ Soil Preparation $\Rightarrow$ Increases Soil
Microbes to stimulate Anionic -
Cationic reactions with plant roots
Chelation $\Rightarrow$ to increase nutrient
uptake

② At Water Body level -

- ① Technologies like Bioremediation to neutralise Chemical Runoffs
- ② Aquaculture ⇒ fish farming reduces impact of urea runoff
- ③ Wetland Rejuvenation through Dredging etc

③ At Air / Atmospheric level -

- ① Emission - reduction Bioengineering
eg. HD-3359 wheat variety emits less Methane
- ② Prevent Stubble Burning through Best Practices like Chhattisgarh's "Granthan"

Agriculture runoff prevention can help secure not just SDG-2 but also SDG-14 / SDG-15

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)

15

Rising tourist influx in Himalayas is seen in long queues of cars to Mussoorie etc. This has breached Ecological Carrying Capacity

Capacity of an ecosystem to sustain human pressures while maintaining ecological stability

This Causes Man - Made Disasters :

- ① Landslides → Steeper Slopes due to road cutting causes it
⇒ Chardham Project
- ② Land Subsidence ⇒ due to greater infrastructure load & human footfalls
⇒ Joshimath crisis
- ③ Cloud Bursts ⇒ by Urban Heat island effect in hill stations
⇒ Shimla Cloudburst 2023

- ④ Forest Fires $\Rightarrow$ tourists leave burning camp fires / cigarettes $\Rightarrow$ ~~Uttarakhand~~
Chamoli forest fires 2024

उम्मीदवारों को इस हाशिए में नहीं लिखना चाहिए
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Need is : Sustainable Tourism to mitigate such disasters:

Measures needed to be implemented $\rightarrow$

- ① Community tourism $\rightarrow$ Community knows ecologically sustainable activities $\Rightarrow$ Meghalaya Living Roots Bridge maintained by locals
- ② Reduced Traffic flows through "Tourist Passes" $\Rightarrow$ Controls & distributes tourist load $\Rightarrow$ learn from Uttarakhand passes for Kedarnath Yatra
- ③ Technological solutions $\Rightarrow$ Shotcrete on steep slopes prevents landslides
- ④ Awareness & training to tourists at base camps $\Rightarrow$ in Thennala, Kerala $\Rightarrow$ tourists trained before

Entering Western Ghats

- ⑤ Tourist Plans be distributed location-wise to reduce concentration.

Sustainable tourism is sine qua non to prevent future disasters like the Wayanad Landslides.

Securing this upholds "Dharamsala Declaration on Tourism" as well as Sendai Framework.

17.

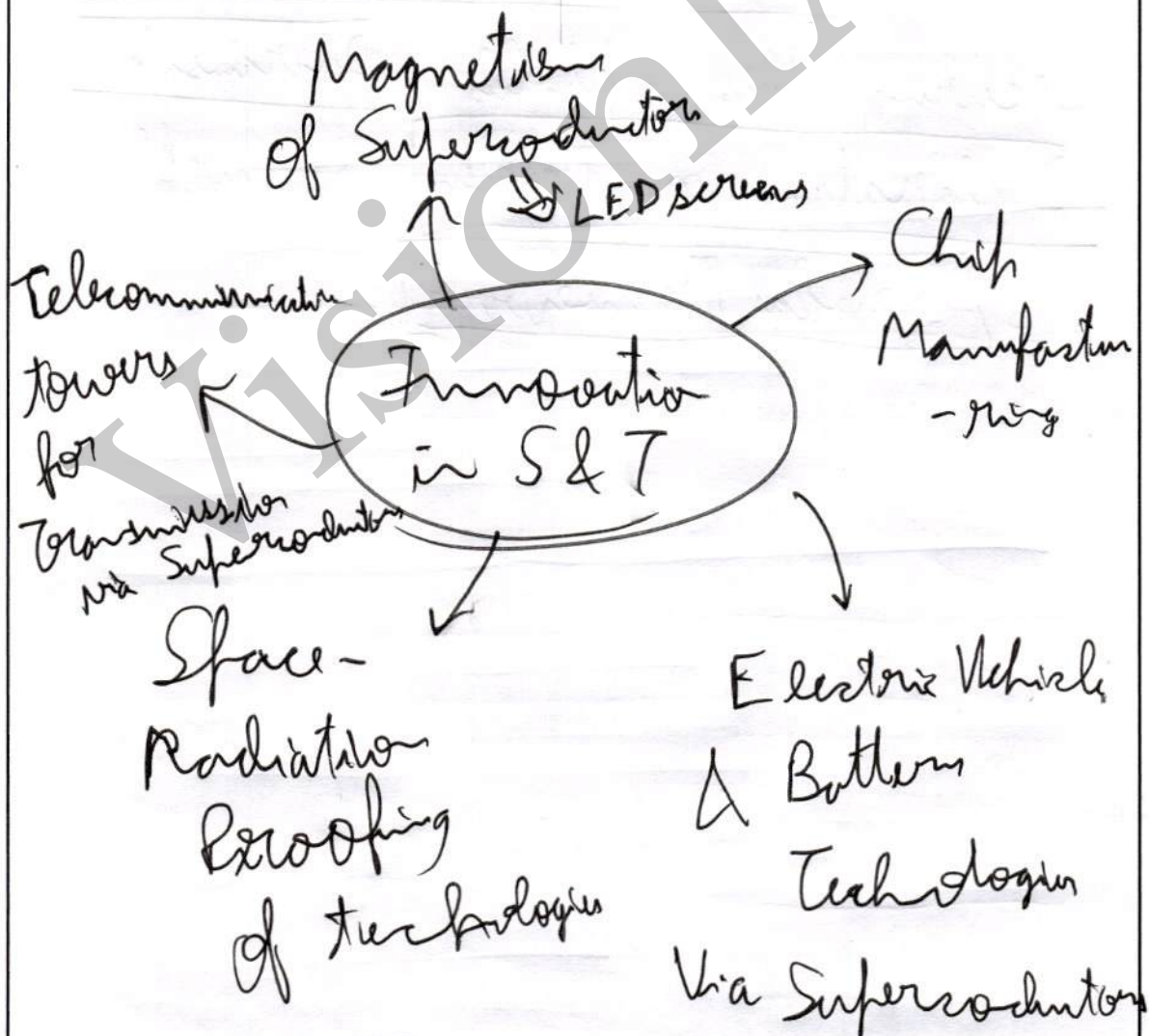
सुपरकंडक्टर्स विज्ञान एवं प्रौद्योगिकी के विभिन्न क्षेत्रों में नवाचार को किस प्रकार बढ़ावा देते हैं? उदाहरण सहित स्पष्ट कीजिए। (उत्तर 250 शब्दों में दीजिए)

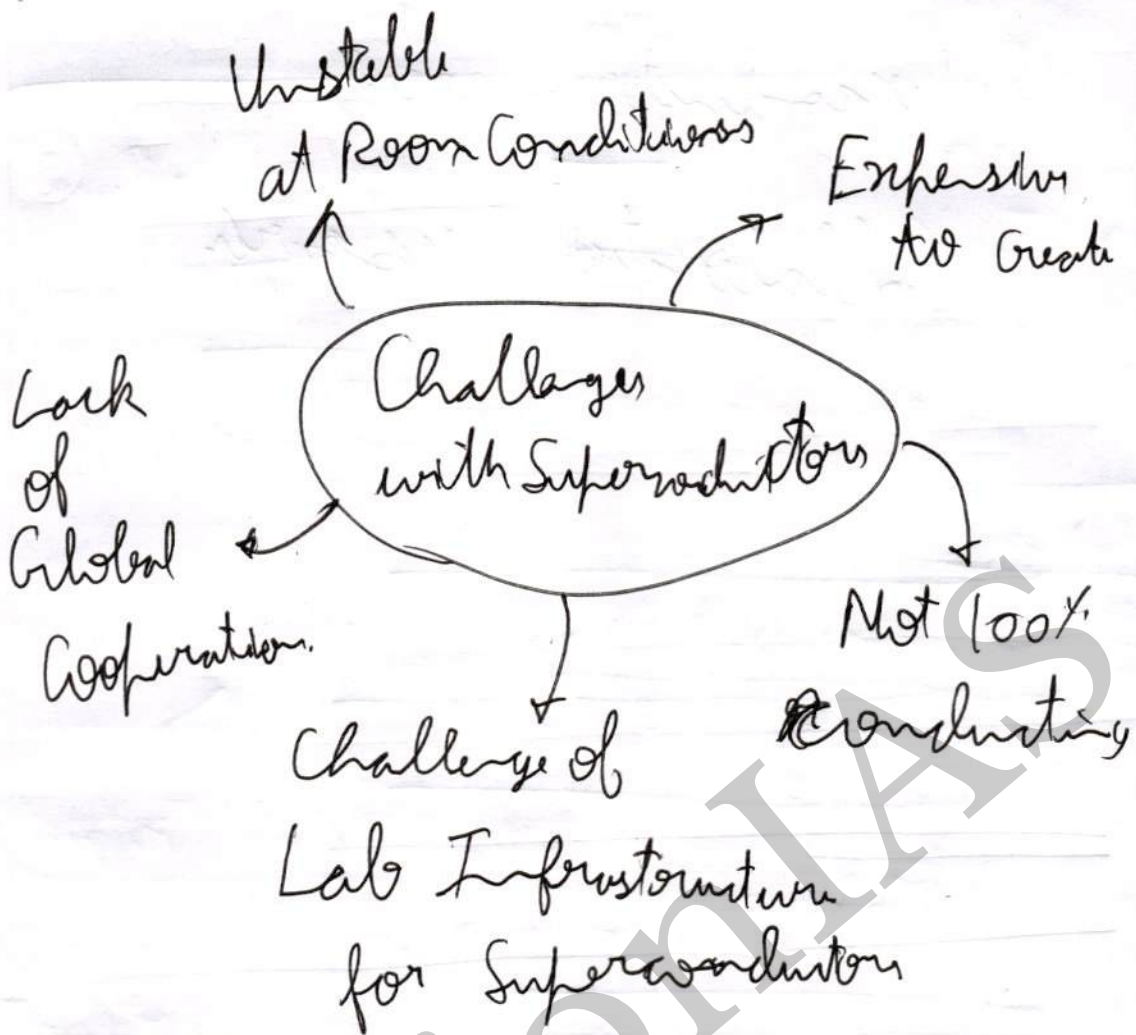
How do superconductors fuel innovation in diverse fields of science and technology? Illustrate with examples. (Answer in 250 words)

15

उम्मीदवारों को इस खण्ड में नहीं लिखना चाहिए
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Superconductors are materials with zero (negligible) ~~resistivity~~ ~~conductivity~~ (thermal & electrical)





Superconductors have Zero
Magnetic field lines within
which has great usage in
Nuclear Fusion reactors

(24) ITER of RERN, EAST of
China

Superconductors need
collaborated research

उम्मीदवारों को
इस हार्जिए में
नहीं लिखना
चाहिए
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VisionIAS

8.

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। सविस्तर 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)

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इस दृष्टि में
नहीं लिखना
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15

IPRs are critical for innovation
Especially in the era of 4th Industrial
Revolution. Thus, India has laws
for various IPR types

IPR types & laws associated

- (I) Copyright → Copyright Act 1957 for
literary, art, music etc
- (II) Patents → Patent Act 1970 for technical
innovations & 20-years embargo on
invention
- (III) Trademarks → Trademarks & Designs
Act 1999 ⇒ secure
commercial logos & industrial
designs
- (IV) GI → Geographical Indication Act 1999 for
support to local, traditional industries
- (V) Plant Patents → Plant Varieties Protection
& Farmer Rights Act [PPVFR Act 2001]
to secure crop innovation

Yet, the Commercialisation of IPRs

is limited -:

⇒ India ranks 3rd in Patent filing (1.3 million patents), but 9th in terms of commercialisation via cited patent

Reasons -:

(I) Enforcement Challenges ⇒

1) Poor Dispute resolution ⇒ (a)

Intellectual Property Appellate Tribunal
abolished in 2023

2) Lack of Awareness on patent enforcement
- not in researchers

3) Evergreening issue

(II) Administrative Challenges :

1) Long-drawn Application process
↳ over six months average time
for action on Patent application

2) No Unified Platform to integrate
Indian Patents with Global
Patents ⇒ leads to allegations
of piracy, redundancy by
USA, EU

(11)

Regulatory Challenges -1

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इस क्षतिपूर्ति में
नहीं लिखना
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- 1) IPR independent regulatory
authority is ~~of~~ absent $\Rightarrow$ administered^{ne}
by CGTDM (Controller General)
- 2) Poor oversight on Research
Relevancy in institutes like IITs
- 3) Poor Industry-Academia linkage
- 4) Poor Copyright enforcement as pointed
by Shyam Benegal Committee
- 5) Poor GI Tag utilisation by local
communities due to lack of
government support $\Rightarrow$ Underperformance
of 'Kannauj' 'Ittar' (Perfume)

Recent Steps Taken $\rightarrow$ National IPR Policy

- $\hookrightarrow$ NIPAM for IPR awareness in schools
- $\hookrightarrow$ WIPO Treaty for ^{Traditional} Genetic Resources

IPR protection must involve both
"Innovation" & "Inclusivity" to reach

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)

15

Theaterisation of commands refers to jointness & integration of all three services under unified command, geographically - focussed theatres.

Challenges in Creating Theatre Commands

- ① "Service Parochialism" (Marsh V. Pant)
 - Service culture resists against integration & dilution of culture of IAF, Army, Navy
- ② Hierarchy of Service Chiefs would be challenged by Theatre Commanders
 - ⇒ resistance from Chiefs
- ③ Asset Allocation → IAF has largest assets ⇒ resists sharing with Army
- ④ Apprehensions of Army-centric threat theatres eg Northern Command
- ⑤ Military Regionalism ⇒ threat on Unity of India

Yet Theaterisation leads to :

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I Greater Integration :-

- ① Resource Sharing between three services $\Rightarrow$ greater integration of assets like "army airplones"
- ② Coordinated operations based on "theaters of threat"
- ③ Commanded by Single Commander creates integration in training & battlefield
- ④ Unified Intelligence inputs of Department of Military, Airforce & Naval intelligences

II Greater Rationalisation :-

- ① Reduces Redundancies $\Rightarrow$ Soldiers of Army can be trained as IAF pilots
- ② Joint Procurement plans based on threats in theater $\Rightarrow$ rationalisation

defence assets $\Rightarrow$ Reduces defence expenditure

③ Joint Exercises within tri-services
 $\Rightarrow$ Vajra Bruhar $\Rightarrow$ greater
nationalisation with battle-ready
forces

④ In line with Military structures
of USA, UK, France, Russia
 $\hookrightarrow$ better bilateral exercises $\Rightarrow$
"Kush Abhyas" with USA

Steps Taken :-

① CDS created to Synergise
three services procurement &
operations

② Inter-Services Organisation Act 2023
for unified Command, Control,
Discipline

Threats are geographically - focused,
yet hybrid warfare needs amalgamation
of forces nationwide to uphold sovereignty
of India

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)

15

"Border Villages are strategically critical border assets" - Defence Minister Rajnath Singh

Significance of Border Villages for Border Security

- 1) Eyes & Ears of Army $\Rightarrow$ local communities know the terrain best $\Rightarrow$ guide to Army operations
 $\Rightarrow$ Historians of Ladakh flagged Chinese incursion
- 2) Strengthen National integrity by "Reaching the last mile" showing government efforts to include border villages in India's growth story
- 3) Friendly borders if Community is alert $\Rightarrow$ No need for expenditure on border fencing $\Rightarrow$ Bhutan

(4) Cross-border Counter-strategy to prevent edge to adversary

eg India's Vibrant Villages Program to Counter Chinese Xiakong Villages

5) Faster Military Deployment through better transport infrastructure & community help.

Measures Taken by government

(I) PM-DEVINE to develop border villages of North-east

(II) Vibrant Villages Program to develop border villages along LAC, Chinese border.

(III) BRO (Border Roads Organisation) works

eg Sela Tunnel (Arunachal);
Chenab Rail Bridge (J&K), Zoji La Tunnel

Yet, there are Challenges in border Villages development :-

- I Increased Militarisation of society
in villages $\Rightarrow$ Threat of insurgency
- II Viewed as interference by
autonomous regions $\Rightarrow$ Marga Villages
- III Destruction of fragile ecology
as most of Border Villages lie on
Dense Himalayan forests
- IV Against the "Defensive Posture" of
India $\Rightarrow$ Border infrastructure can
benefit adversary in case of
incursion $\Rightarrow$ Daulat Beg Oldie Highway

Thus, Steps like Forest Conservation
(Amendment) Act 2023 which allows
border infrastructure ~~but~~ development
must be re-examined from ecological
social & cultural angle (as per
Supreme Court). This upholds balance
between National Security & Regional
Autonomy, Inclusive Growth.

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