



**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 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. : 01275069

अभ्यर्थी का नाम/Name of Student : PRASTUTI UPADHAYA

माध्यम: हिंदी/अंग्रेजी  
Medium: Hindi/English

ENGLISH

तारीख  
Date

25-08-2024

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

केंद्र  
Centre DELHI - KAROL BAGH  
(001)

निरीक्षक के हस्ताक्षर  
Invigilator's Signature

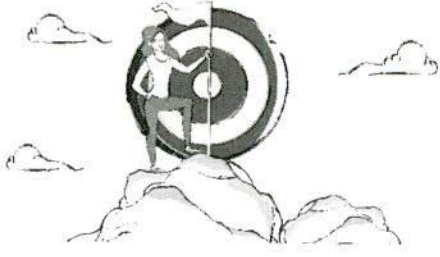
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	<p style="text-align: center;"><b>महत्वपूर्ण अनुदेश</b></p> <p>उम्मीदवारों को नीचे उल्लिखित निर्देश सावधानी से पढ़ लेने चाहिए। किसी भी निर्देश का उल्लंघन करने पर उम्मीदवारों को मिलने वाले अंकों में कटौती, उम्मीदवारी रद्द या आयोग के परवर्ती परीक्षाओं के लिए वर्जित करने इत्यादि के रूप में दण्डित किया जा सकता है।</p>	<p style="text-align: center;"><b>Important Instructions</b></p> <p><b>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.</b></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 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)	

**प्रासांक 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)

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

Food Processing refers to <sup>and treatment</sup> processing of food products to increase their shelf life and make them more marketable. It is worth \$121 billion and employs 20.5 lakh people. It is a sunrise sector.

### FOOD SAFETY CHALLENGES

#### Rapid growth of sector

- rise in number of mega food parks
- increase in people employed in the sector
- 98% of the sector is informal

#### Challenges

##### (1) farming stage

(a) lack of awareness of use of fertilizers

→ Ideal ratio is 3:2:1 of NPK while in Punjab it is around 9:4:1.

(b) use of genetically modified crops despite ban

→ contamination of GM rice.

## ② Storage + Procurement

(a) lack of cold storage

(b) non-adherence to sanitary and phytosanitary

measures.

## ③ Processing

(a) use of unscientific processes

(b) using stale ingredients

(c) plastic contamination  $\rightarrow$  recent study showed

all brands of sugar & salt had microplastics.

(d) deaths due to Indian cough syrups.

## ④ Marketing $\rightarrow$ misleading

$\rightarrow$  IMA ~~FSSAI~~ <sup>FSSAI</sup> declared how protein powders  
contain excess sugar.

## ⑤ Retail

$\rightarrow$  poor storage

$\rightarrow$  selling expired products

black market  $\rightarrow$  sale of Maggi even when banned.

## Way Forward

$\rightarrow$  regular checks by FSSAI

$\rightarrow$  awareness among farmers.

$\rightarrow$  export regulations + adherence to WTO standards

The sector can achieve improving forward & backward linkages if such challenges are rectified & help achieve  Doubling Farmers' Income and increase exports.

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 हार्गिण में नही लिखना चाहिए  
Candidates must not write on this margin

Public Distribution System (PDS) is controlled by National Food Security Act, 2013 and Fair Price Shops sell procured ~~grain~~ grains at low prices.

### EVOLVING PROCESS

#### (A) Issues

- ① issues around lack of storage
- ② food wastage in India is around 20-25%
- ③ black marketing by middlemen.
- ④ over coverage → PDS covers over 67% of population → fiscal strain
- ⑤ does not account for state-based inflation

#### (B) Successes

- ① helps achieve SDG-2 of No Hunger.
- ② allows consumer spending on other items like education, healthcare.

- ③ last resort for poor and BPL families
- ④ interface between government and public
- ⑤ sale of goods from govt stocks to control  
inflation in market  $\rightarrow$  sale of high volatility  
products like tomato, onion.
- ⑥ MSP realisation for farmers  $\rightarrow$  acts as  
insurance + income assurance.

### Way Forward

- ① Shanta Kumar Committee suggests reducing  
PDS coverage to 40% from 67%.
- ② targeted approach for BPL families.
- ③ cold storage facilities for increased shelf life
- ④ shift to digitization of all inventory  
to prevent black marketing.
- ⑤ integrate with e-NAM.

PDS provides a last relief for many families in India & FPS act as source of cheap grains and should be continued but control coverage.

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

Agri-tech startups refer to startups that deal with agriculture-related technology. It is a sunrise sector and can tap a market that ~~involve~~ employs 40% of Indian population.

### BENEFITS

① helping with access to cutting-edge tech-nology for crop planting & growth

eg use of drones for fertilizer application

② help with innovating new irrigation techn-iques in arid regions.

③ research & development of fertilizer

eg nano DAP, ~~no~~ liquid NANO urea

④ digitization of agricultural portals and information.

⑤ better price realisation via agri-apps.

⑥ ~~star~~ high tech storage techniques eg cryogenic storage

## Limitations

① high costs that can't be afforded by all farmers. eg 82% farmers are small & marginal farmers.

② lack of govt. support at large scale

③ EODB and low credit access

④ Problem of dwarf firms & missing middle

⑤ bureaucratic red tape

eg EODB Index of World Bank → 163<sup>rd</sup> Rank  
in contract enforcement

## Way forward

① capacity building by special courses in tech univer-  
-sities

② credit access under MSME PSL limits

③ focus on integration with backward linkages  
of food processing ~~sector~~ sector

④ focus on innovation and R&D collaboration  
with IARI, etc.

⑤ use of tech like AI, Big Data, geospatial mapping

Agri tech startups can create employment while  
also help achieve increased agricultural productivity

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

Digitization of land records refers to the conversion of all land data into a virtual format and has been crucial in agri transformation.

### ROLE

① help implementation of land record reforms by moving to conclusive land titling than presumptive land titling.

② help end land disputes and allocation of disputed land

③ improve tenancy of land and land leasing → land consolidation to tenant  
→ occupational mobility to owner to move to other professions.

④ redistribution of unclaimed land to end landlessness.

⑤ Storage of data in a safe way → prevent tampering + corruption.

### Issues

- ① data safety issues + cyberattacks, malware
- ② costly at an all-India level.
- ③ lack of internet facilities at rural level.
- ④ lack of uniform measurement techniques, traditional techniques still common

### Way forward

- ① use of geospatial mapping  
eg GAGAN
- ② use of AI and ~~the~~ blockchain to prevent data security issues → Amaravati used blockchain
- ③ DILRMP scheme
- ④ Example of states to be replicated ⇒ Karnataka implemented "Bhoomi Project", Andhra Pradesh's "Mee Seva"  
Land records digitization can help achieve <sup>ultimate</sup> goals of land reforms of "land to the tiller"

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

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

In 2041, around 59% of India's population will be of working age (15-59 years) and India needs to reap the demographic dividend

State of manufacturing → Issues

(1) share to GDP ⇒ 17% (2023)

↳ stagnated share

(2) employs around 30% of population, lower than agriculture (40%)

(3) concentration of dwarf firms + problem of missing middle

(4) low EoDB and bureaucratic red tape

eg) 63<sup>rd</sup> rank in EoDB index of WB

(5) high logistics cost eg) 14% (global avg ~9%)

(6) lack of marketing and labour intensive

industries eg) Bangladesh, Vietnam

(7) structural Thwarting → agri to services direct shift

## Role of Manufacturing

- ① can employ large population
- ② labour intensive industries  $\rightarrow$  tentile manu-  
-facturing, food processing, etc
- ③ large market base
- ④ absorb unskilled & semi-skilled workers too
- ⑤ de-populate agriculture sector  $\rightarrow$  increase agri  
productivity
- ⑥ Release India from Middle Income Trap.
- ⑦ Inclusive growth
- ⑧ improve realization of FTAs with export  
orientation  $\rightarrow$  currently 5% - 15% realization  
compared to ~80% for developed countries

## Way Forward

- ① improve MSME sector ~~by~~ (UK Sinha  
Committee)
- ② promote PLI schemes
- ③ value-addition of raw materials  $\rightarrow$  integrate  
with global supply chains.
- ④ Upskilling  $\rightarrow$  PMKVY  
Manufacturing-led model is necessary to shift  
from ~~investment~~ consumption economy to  
investment-led model.

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

India has a 7000 km long coastline that is heavily populated with major cities like Mumbai, Chennai, Vishakhapatnam on coastal areas

### Growing Natural Hazards

- ① increasing number of cyclones in both Arabian sea & Bay of Bengal eg Kemal (in Bay of Bengal), Tauklee (Arabian sea)
- ② Frequent flooding & landslides near Western Ghats eg Wayanad landslides (2024), Kerala floods
- ③ Tsunamis in Indian Ocean eg submergence of Indira Point
- ④ Man-made issues eg oil spills, sand mining

### Resilience of Coastal Communities

- ① Promote traditional sustainable techniques eg Kuttanad rice farming below sea level

2. Wetlands on coasts to be protected  
eg Anghamashini Estuary included in Kansar sites.
3. Promote conservation of mangroves by local communities eg Sunderbans, Bhitarkanika
4. Awareness & education of disaster risk reduction eg [as under Sendai Framework]
5. Implement Coastal Regulation Zones after consultation with coastal communities
6. satellite cities for metropolises on coasts for depopulation eg Thane for Mumbai
7. skilling and mock drills with SDRF teams.



Coastal communities act as first line of defence in case of coastal disasters and must be included to fight rising sea levels and imminent dangers.

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

Green Credit Programme aims to provide credit for activities for green growth.

### EXTEND BEYOND CARBON MANAGEMENT

- ① It also focuses on inclusion of sustainable livelihoods & fighting disasters.
- ② It also aims to preserve water & air resources.
- ③ Augments capabilities in agriculture sector to promote organic farming and natural fertilizers.
- ④ It stresses on conservation of existing ecosystems not just for carbon management but also for biodiversity preservation.

## Issues

① lack of funding cooperation

eg → developed countries have not disbursed  
\$100 bn ~~not~~ promised every year

② does not offer alternatives for phase -  
down approach adopted by developing countries

③ more ~~is~~ mitigation-oriented than ~~adp~~  
adaptation.

④ lack of corporate partners.

⑤ bureaucratic red-tape.

Hence, Green Credit Programme will only be  
successful when integrated with India's  
development path and focused on India's  
particular needs. Govt needs to coordinate  
to open avenues for the programme.

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)

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

NavIC is India's indigenous <sup>regional</sup> navigation satellite system. It runs with ~~help~~ help of seven-satellites constellation.

scope → covers all of India  
→ also covers 1500 km beyond Indian borders

### Need for NavIC

- ① all developed countries have their own systems eg GPS (USA), Beidou (China), Galileo (EU).
- ② Reliance on foreign products for confidential activities eg defence, surveillance of borders, etc. → not ideal + safety concerns
- ③ Reduces imports dependency.
- ④ can be seamlessly integrated into Indian

products like satellites, drones, etc

⑤ Can be used for India-based data collect-

-ion and mapping.

⑥ Innovation & R&D augmented due to such inventions, can be used for academic research

⑦ Can help armed forces in theatrisation & attack coordinated attacks, border forces in patrolling.

⑧ can be later expanded to worldwide system

⑨ can be integrated with Maya OS and Bhar OS (Indian operating systems) -ending

Google & Apple's monopoly

Way forward

→ integration with Indian services.

→ expand of research for worldwide coverage

NavIC has shown India's rising stature as a technologically-advanced nation.

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 हाथिरे में नही लिखना चाहिए  
Candidates must not write on this margin

Cybercrimes in financial domain are an increasing threat to financial systems across the world. India is the 3<sup>rd</sup> most vulnerable country to cyberattacks.

Frontier for global money laundering

- ① attack on banking systems → conversion of black to white money.
- ② use of cryptocurrency to commit frauds
- ③ cryptocurrency used for payment in organized crimes, terrorism, etc.
- ④ Ransomware attacks demanding money
- ⑤ phishing attacks + scams in name of banking officials.

⑥ funnelling laundered money into tax havens. eg Mauritius.

⑦ legal tender of cryptocurrency in some countries eg El Salvador.

Government can take steps

① National Cyber Security Policy, 2013 should be upgraded to include this

② CERT-In special cell for ED & PMLA agencies

③ FIU - IND should be informed of such breaches.

④ NATGRID - like feature for financial attacks.

⑤ mandatory reporting within 6 hours for companies attacked.

⑥ Public awareness against scams.

⑦ Capacity building  
Cybersecurity threat presents a new challenge that has to be tackled by India's security infrastructure.

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 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)

10

Defence technology absorption forms an integral part of upgradation of defence forces to counter increasing attacks.

**NEED**

① Defence is an evolving sector, rival countries have good technology  $\rightarrow$  China has hypersonic missile systems.

② Important for new technology to be adapted to workforce of defence  $\rightarrow$  training and skilling

③ Upgrades for areas India lags behind  
 $\rightarrow$  buying Rafale jets from France + training to operate them.

④ increase cooperation with allies  
 $\rightarrow$  Malabar exercise with QUAD countries

② Need to counter new threats

eg use of unconventional warfare,  
cyberattacks, drones, etc.

### Challenges

① Security concerns about using foreign products eg US sells weapons to Pakistan too, like F-16 jets.

② Constant upskilling of ~~the~~ armed personnel

③ Agnivur scheme → includes soldiers  
lacking expertise in handling advance system

④ Agnivurs leave forces after 4 years →

security challenge

⑤ Lack of indigenisation.

### Way forward

• focus on defence indigenization

• upskilling & theatreisation of commands for

interoperability

Tech absorption is necessary to upgrade  
defence forces with state-of-the-art technologies.

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

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

North Eastern regions presents specific issues  
 due to its vast history and lags behind in trade & industries.

### Issues faced

- ① separation of geography  
 ↗ connected to mainland by 16-km wide  
Chicken's Neck / Siliguri corridor.
- ② Cultural uniqueness + tribal population  
 that is not skilled.
- ③ ecological fragility of Himalayan hilly region ↗ Cherrapunji, Mawsynram -  
wettest places on earth.
- ④ continuous militancy & separatist ideas  
 for long time ↗ NSCN (Nagaland), ULFA (Manipur)
- ⑤ inter-state issues, inter-ethnic conflicts  
 ↗ Meitei-Kuki violence in Manipur (2023)

⑥ anti-outsider emotions

eg Assam Accords.

⑦ lack of transport to connect to Indian markets eg less railway penetration.

⑧ lack of raw materials & minerals in North East except petroleum fields.

⑨ infiltration from other countries

eg Bangladesh, Myanmar

⑩ AFSPA Acts in many states eg Assam, Arunachal, Nagaland

### Measures by Government

① ending insurgencies and militantcies  
eg Naga Peace Agreement (2015) with NSCN

② calming inter-ethnic conflict by dispute resolution and ST status to communities.

③ National Register of Citizens to counter illegal immigration [Assam].

④ Protection to tribal populations eg 5<sup>th</sup> & 6<sup>th</sup> schedules of constitution.

5. establishing oil & natural gas fields  
to promote the sector  $\Delta$  eg Digboi oil field
  6. Reservation for locals in jobs
  7. Specific schemes for North Eastern states  
 $\Delta$  Budget 2023
  8. construction of roads and railways  
in areas like Guwahati and connecting all  
capitals, etc.
  9. Abolished Free Movement Regime in 2024
  10. 90% funding of centrally-sponsored schemes  
by Centre.
- Way Forward
1. focus on promoting indigenous products  
 $\Delta$  Assamese sarees, tribal paintings
  2. establish peace in the region
  3. skilling of people
  4. Tourism sector has a lot of scope.
  5. Improved transport

North East is a region that has a lot of  
untapped potential that will be instrumental  
for ₹ 5 billion economy.

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 शीट में नही लिखना चाहिए  
Candidates must not write on this margin

Micro-irrigation systems refer to irrigation techniques that focus ~~on~~ on targeted application of water and avoids any wastage at lower costs.

### IMPORTANCE

- ① promote alleviating groundwater scarcity in North-western India
- ② Reduce water subsidy bill
- ③ promote growth of crops in arid & semi-arid regions. eg Rajasthan.
- ④ can reform saline soil  
eg "Reh" soils in Punjab
- ⑤ controlled fertilizer application with.

water.

eg ~~liquid~~ liquid Nano Urea and  
drip irrigation system.

6. Promote cultivation of ~~not~~ drought-  
resistant crops

eg milletts like jowar, bajra

7. More sustainable rice production in  
areas without ample water

eg system of rice intensification

8. Promote use of water for other purposes

eg drinking, sanitation

9.

reduces methane emissions → less  
carbon greenhouse emissions.

10. Promote traditional water conservation  
and reservoir systems too

eg khadins, johads.

## Issues

- ① lack of willingness to move to micro irrigation
- ② requires higher initial cost.
- ③ Water subsidies.
- ④ existing infra to extract groundwater
- ⑤ lack of ~~crop~~ demands for millets, etc.
- ⑥ Rice gets good prices → low cost of production with existing system

## Way forward

- ① govt should integrate PM-PRANAM with such systems
- ② promote incentives / PSL lending for micro-irrigation
- ③ Rationalize water subsidies especially in Green Revolution states.  
Micro-irrigation systems can help us achieve goal of SDG 11 and help us transform agriculture to sustainability.

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

The share of freight transportation by Indian railways has fallen from 87% in 1950-51 to less than 20% in 2018-19.

### Issues

- ① shift to road transportation
- ② delays in Indian railways → late schedules, lack of timely delivery, etc
- ③ lack of ~~to~~ bureaucratic support
- ④ focus on passenger travel (62%)
- ⑤ frequent railway accidents + lack of cheap insurance
- ⑥ cheaper cost to use roadways
- ⑦ technology advancement & convenience in roadways  $\rightarrow$  Fast TAG

## Strategies

① corporatisation of railways should be carried out → Rakesh Mohan Committee

② PPP model for reforming railways can be adopted.



eg Mumbai Metro

③ Regulatory authority for railways should be established as recommended by Bibek Debroy committee.

④ Reduce logistics cost in Indian economy

eg 14% for India, ~9% is global average

⑤ double length of tracks to cover more areas.

⑥ Shift from passenger focus and evolve a

balance between freight and passenger traffic.

(7) Reduce accidents and safety measures should be adopted

eg → integrate with KAVACH system

(8) Insurance for freight transport via railways.

(9) high-speed railways for punctual deliveries

(10) Improve bureaucratic issues, single window clearance, "red-carpet" not "red-tape".

As PM Modi said "The govt. has no business being in business"; ~~some~~ some PPP model can

be tried to improve ~~and~~ freight capabilities of Indian railways and generate economies of scale.

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)

15

Currently, renewable energy forms ~~40%~~ <sup>40%</sup> of India's energy mix. India has achieved a lot in past few decades to reach this stage.

### FACTORS THAT HELPED INDIA

① geographic and natural features

eg states of Rajasthan & Gujarat have high solar capacity and Tamil Nadu gives wind capacity.

② bottom-up approach

eg PM-KUSUM → to include farmers in solar energy and sell it to increase incomes.

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

③ Culture of environmental protection

eg Chipko Movement.

④ Sustainable approach to all issues

eg shifting to natural fertilizers under PM-PRANAM.

⑤ Research & Development

eg Nano Urea fertilizers by IFFCO.

⑥ Reducing ~~coal~~ coal in energy mix  
and following "phase-down" approach

⑦ International ventures & initiatives.

eg International solar Alliance with France.

⑧ Technology transfer

⑨ Indigenous manufacturing

eg semiconductor manufacturing → useful  
for solar panels too.

⑩ using available, untapped resources

eg ethanol blending

⑪ Middle path of nuclear power

eg Kudankulam plant reached criticality

⑫ Ratification of treaties eg Environment Protection Act, 1986

### Way forward

① Aim at reducing carbon emissions and net zero by target of INDC of 2070

② increase renewable energy capacity to 500 GW by 2030.

③ work on climate finance to make it more sustainable eg Greenium concept.

④ more focus on adaptation and not just mitigation

⑤ collaboration with developing nations  
eg Green Grids Initiative

India ~~is~~ <sup>not</sup> despite being a historical emitter  
has achieved strides in renewability and  
should work towards "Green India".

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

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

Agricultural runoff refers to the pollutants from fields including fertilizers & pesticides entering the environment.

### Contribution to Pollution

- ① the run-off takes with it soil nutrients leaving fields without original nutrients.
- ② The runoff enters ponds and lakes, rivers, polluting the water → unfit for human use

eg Yamuna river

- ③ The fertilizers in the water bodies also cause eutrophication and algal bloom → leading to death of aquatic organisms due to low oxygen.

4. Eutrophication also results in growth  
of invasive species → takes resources from  
original ~~fauna~~ flora.

eg → water hyacinth called "terror of Bengal"

5. The runoff percolates into the soil  
and contaminates ground water

eg → high cases of cancer in Punjab due  
to consumption of contaminated water.

6. fertilizers enter the organisms and

biomagnification takes place when consumed  
• through food web.

eg → DDT from fish to birds to humans

7. Measures

1. promote use of natural fertilizers

eg → under PM-PRANAM or organic

farming

② reduce fertilizer subsidy

③ awareness about controlled application

④ curb black market that sells banned products eg DDT.

⑤ promote water-cleaning bacteria

eg bioremediation techniques.

⑥ promote micro-irrigation systems, ~~discourage~~  
discourage flood irrigation

⑦ Natural techniques of farming should  
be promoted eg Ghazni rice fields.

⑧ Protection of wetlands.

⇒ Hence, fertilizer runoff can cause a  
variety of issues & should <sup>be</sup> ~~be~~ controlled  
to prevent large scale pollution of  
wetlands and groundwater.

16.

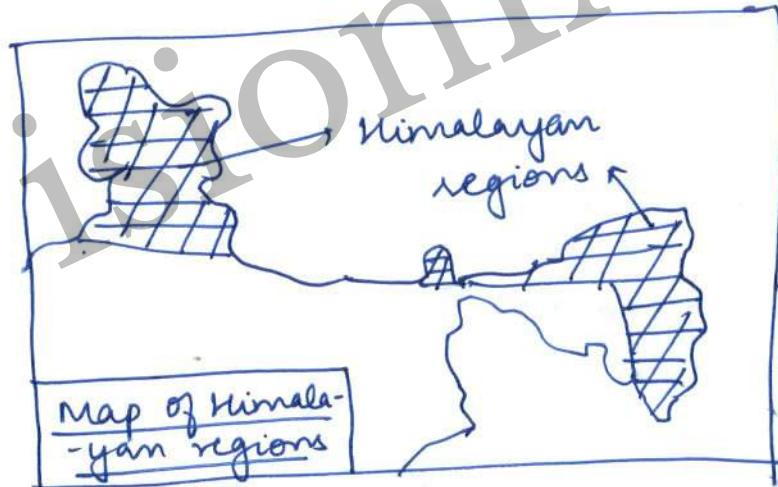
हिमालयी राज्यों में पर्यटकों की बढ़ती संख्या ने उनके पारिस्थितिकीय समावेशन क्षमता को पार कर लिया है, जिसके कारण बड़े पैमाने पर मानव-जनित आपदाएं उत्पन्न हुई हैं। संधारणीय पर्यटन को बढ़ावा देते हुए ऐसी आपदाओं को रोकने के लिए क्या उपाय किए जा सकते हैं? प्रासंगिक उदाहरणों के साथ चर्चा कीजिए। (उत्तर 250 शब्दों 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 हार्शिए में नहीं लिखना चाहिए  
Candidates must not write on this margin

15

Himalayan states form an ecologically sensitive zone due to young nature of Himalayan mountains and location at earthquake-prone region.



### Issues in Himalayas

① Frequent land-subsidence cases

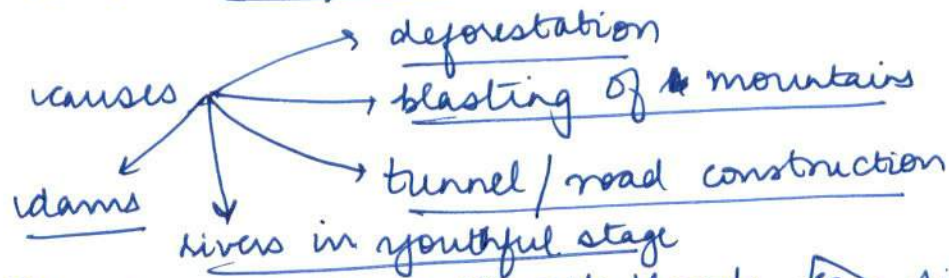
eg Joshimath land subsidence

caused due to

- deforestation
- indiscriminate construction
- population rise

② frequent landslides and earthquakes  
→ Himalayas are in Zone 4 & 5 of earthquakes  
eg → Kedarnath, recent trapping of workers

due to collapse of tunnel in Uttarkashi



③ glacial lake outburst floods eg → Sikkim's  
Chonak lake

④ excessive tourist influx from nearby  
urban centres + pilgrimage sites eg → Uttarakhand

⑤ uncontrolled construction

⑥ construction of dams and reservoirs

eg → Tapovan dam

⑦ violation of building codes

eg → most hotels in Joshinath were illegal constructions

⑧ disregard to warnings

⑨ lack of proactive bureaucracy

⑩ sand-mining in foothills

eg → case of Chumbi lake, Assam

## Measures

- ① controlled tourism via regulated numbers
- ② Central portal for reservations
- ③ regular checks on illegal constructions
- ④ NDMA guidelines for landslide <sup>hazard zones</sup> mapping
- ⑤ involvement of local communities  
and local bodies in capacity building
- ⑥ afforestation and terrace farming
- ⑦ deep studies of Himalayan ecology  
to come up with Himalayan action plan.
- ⑧ prioritization of border roads and  
national security during tunnel construction

Himalayas form a geographical and cultural  
representation of India and must be protected  
from consumerist tourism by shifting to  
sustainable tourism practices

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

Superconductors refer to materials that have zero resistance to electric current flow at low temperatures.

### Fuel Innovation

① use in nanotechnology

↳ carbon nanotubes

② used in promotion of space sector and indigenization of technologies

↳ cryogenic engines development also at low temperatures.

③ offer better understanding of magnetic fields as they show giant magnetoresistance.

↳ Aditya-L1 has a magnetometer payload

4. Application in education sector

better display  
screens

digitalization of education.

5. Transport sector → development of

new technologies ~~tech~~

eg → levitating train systems,

bullet trains

6. ~~6~~ energy transfer & transport

7. security fields → cryogenic

technologies are also used in weapons

systems.

8. Nuclear energy and solar energy

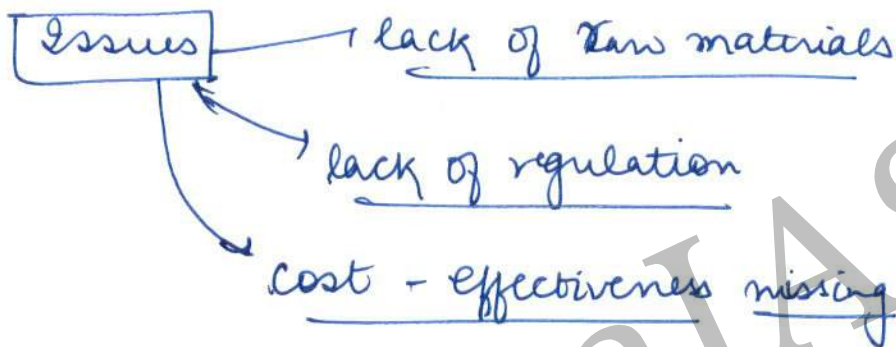
storage and transport

9. faster data transfer over short distances

(10) used in disruptive fields of quantum  
technology

eg Quantum dots

(11) creating cyber secure infrastructure.



Way forward

- (1) can explore avenues for inclusion in various fields
- (2) superconductor policy to extract <sup>raw</sup> materials
- (3) development of cryogenic technologies can facilitate this.

superconductors can be used for furthering  
India's vision of Industrial Revolution 4.0

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)

Intellectual Property Rights in India are covered by WTO's TRIPS agreement and ratified by Indian Patents Act.

### Challenges

#### A. Enforcement

① too many exceptions to patents → compulsory licensing  
eg. COVID-19 vaccine patents

② preventing evergreening is getting difficult.

eg. Natco<sup>Pharma</sup> case in Supreme Court.

③ lack of awareness results in ~~so~~ loss of patents among non-corporate inventors.

## (B) Regulatory

(1) lack of central body without any overlap-  
ping jurisdiction.

(2) India in WTO <sup>Red</sup> ~~Black~~ list for IPR  
violations

## (C) Administrative Challenges

(1) delay in grants of patents

(2) lack of quick dispute resolution

↳ appeals can lie to high court

(3) bureaucratic apathy.

(4) tendency to ~~so~~ rely on paperwork  
than digital database.

(5) lack of scientific methods to establish  
patent ownership or duplication.

## Measures to take

- ① Central authority to handle all cases
- ② fast-track courts for "red carpet"  
treatment.
- ③ time-bound granting of patents and  
dispute resolution mechanisms.
- ④ digital database for patents.
- ⑤ counter evergreening
- ⑥ compulsory licensing to be a last,  
emergency measure.
- ⑦ Coordination at WTO  
IPR rights ~~are~~ form a basis of any  
knowledge-economy and should be  
protected to promote research & development  
in India.

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)

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Theaterisation of Commands refers to

the integration of 3 arms of the defence forces for coordination and effective utilisation.

Need for Theaterisation

① done by most developed militaries

eg USA, Russia, China

② will allow for combining of resources of all 3 branches.

③ 3-pronged attacks and offensives will be possible.

④ common head → Chief of Defence Staff

to coordinate at national level.

(c) interoperability of weapons and defence systems

eg. Agni-Ⅴ (MIRV) can be launched from sea, air & land.

(d) proper coverage of <sup>land</sup> borders, ports, coasts and airspace.

(e) unified access to nuclear capabilities

### Issues

(1) concerns among IAF about dilution of already limited resources.

(2) CDS can dilute powers of 3 chiefs of staff.

(3) lack of skilling of manpower across all weapon & defence systems.

- (4) concerns of dominance of army
- (5) Navy has one combined force  
covering all coastline from Sin Creek to  
Sundarbans + Islands.
- (6) delay due to reasons [Way forward] eg CDS Bipin Rawat's  
death caused delay  
of Tri-service Command

- (1) Theatrisation is the way ahead
- (2) Can target synergies of all 3 forces
- (3) skilling of personnel should be  
target.

Theatrisation of forces can help in  
achieving secure future & India's aim  
to become net security provider in the  
Indian Ocean region.

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)

Border villages are playing an important role in internal security apparatus.

Role

- ① countering China's Xiaokang strategy  
of creating border villages.
- ② Act as populated civilian centres  
that are less difficult to infiltrate  
by enemy.
- ③ can help in deradicalization of  
youth.
- ④ promote normal economic activities  
in remote areas like Arunachal.

5. ~~Act as~~ Increase accessibility to border areas in difficult terrain

6. Locals give important intel

eg Kargil War.

### Measures taken

1. Vibrant Villages Programme

→ to develop villages along Chinese border.

2. Promotion of <sup>100%</sup> central funding to implement the schemes.

3. Promotion of village tourism

eg Ladakh villages under UNESCO

4. Coverage of all border states along China border.

- ⑤ focus on promotion of handicrafts
- ⑥ One district One Product programme
- ⑦ Aspirational Districts Programme

Hence border villages can play an important role in ensuring security and economic opportunities in remote border areas

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