

# NEXT IAS

## GS MAINS ADVANCED COURSE 2024

(To be filled by candidate)

TEST CODE : GSMAC2403

Test No. : 03

Name of Candidate: Aditya Agarwal Mobile No. [REDACTED]

Roll No. : GSMAC24 A1094 Start Time 9:00 End Time [REDACTED]

Date of Examination: 25 August 2024 Medium : English ☒ Hindi ☐

| Q. No.            | Maximum Marks | Marks Obtained |
|-------------------|---------------|----------------|
| 1                 | 10            |                |
| 2                 | 10            |                |
| 3                 | 10            |                |
| 4                 | 10            |                |
| 5                 | 10            |                |
| 6                 | 10            |                |
| 7                 | 10            |                |
| 8                 | 10            |                |
| 9                 | 10            |                |
| 10                | 10            |                |
| TOTAL MARKS - 100 |               |                |

| Q. No.            | Maximum Marks | Marks Obtained |
|-------------------|---------------|----------------|
| 1                 | 10            |                |
| 2                 | 10            |                |
| 3                 | 10            |                |
| 4                 | 10            |                |
| 5                 | 10            |                |
| 6                 | 10            |                |
| 7                 | 10            |                |
| 8                 | 10            |                |
| 9                 | 10            |                |
| 10                | 10            |                |
| TOTAL MARKS - 100 |               |                |

GRAND TOTAL - ...../ 250

EVAL CODE: ..... EVAL DTE: .....

### GENERAL INSTRUCTIONS

1. Immediately on receipt of the QCA booklet, please check that this QCA booklet does not have any misprint or torn or missing pages or items, etc. If so, get it replaced by a fresh QCA booklet.
2. Candidates must mention all relevant details like Name, Email, Roll No, Mobile, etc. in the space allocated.
3. Candidate is expected to attempt all 10 questions within the given timeline.
4. Answers must be written in the medium authorized at the time of admission.
5. Candidates must write answers for the specific question under the respective question itself. Any answer written outside the space allotted may not be given credit.
6. Please write neatly. Avoid illegible writing.
7. Do not write/mark irrelevant matters in the QCAB.

### सामान्य निर्देश

1. QCA पुस्तिका प्राप्त होने पर कृपया तुरंत जांच लें कि इस QCA पुस्तिका में कोई पृष्ठ या सामग्री आदि गलत छपी हुई या फटी हुई या गायब तो नहीं है। यदि ऐसा है, तो इसे एक नई QCA पुस्तिका से बदल लें।
2. अभ्यर्थियों को सभी प्रासंगिक विवरण जैसे नाम, ईमेल, रोल नंबर, मोबाइल नंबर आदि का आवंटित स्थान पर उल्लेख करना होगा।
3. अभ्यर्थियों से अपेक्षा की जाती है कि वह आवंटित समय-सीमा के भीतर ही सभी 20 प्रश्नों के उत्तर-लेखन का प्रयास करें।
4. प्रत्येक उत्तर, प्रवेश के समय चुनी गयी भाषा के माध्यम में ही लिखे जाने चाहिए।
5. अभ्यर्थियों को विशिष्ट प्रश्न के उत्तर संबंधित प्रश्न के नीचे ही लिखने होंगे। आवंटित स्थान के बाहर लिखे गए किसी भी उत्तर को क्रेडिट नहीं दिया जाएगा।
6. कृपया साफ-सुथरा लिखें। अपठनीय लेखन से बचें।
7. QCAB में अप्रासंगिक तथ्यों को न लिखें / न ही चिह्नित करें।

REMARKS: .....

FOR OFFICE USE ONLY

| <u>Student Concerns / Query</u> | <u>Evaluator's Feedback / Response</u> |
|---------------------------------|----------------------------------------|
| 1 .....                         | 1 .....                                |
| .....                           | .....                                  |
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| .....                           | .....                                  |
| 2 .....                         | 2 .....                                |
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| 3 .....                         | 3 .....                                |
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| <u>MARKING SCHEME *</u> |               |             |                |
|-------------------------|---------------|-------------|----------------|
| Marks Per Ques          | Below Average | Average     | Above Average  |
| 10 Marks                | Below 3.00    | 3.00 - 3.75 | 4.00 and above |
| 15 Marks                | Below 4.50    | 4.50 - 5.75 | 6.00 and above |

\* Subject to change without prior notice.

| <u>IMPORTANT QR CODES</u>                                                                                                             |                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p style="margin-top: 10px;">Topper's Copy</p>    |  <p style="margin-top: 10px;">Common mistake and Correct Filled QCAB</p> |
|  <p style="margin-top: 10px;">Copy Scanner App</p> |  <p style="margin-top: 10px;">Next IAS Test Centre Location</p>          |

**MACRO COMMENTS**

*The Purpose of evaluation@nextias.com is to provide constructive suggestions on 'How to improve Answer Writing and thereby score better marks.*

**STRENGTHS OF THE CANDIDATE**

**AREAS OF IMPROVEMENT**



**IMPROVEMENT SUGGESTIONS**

1. भारत में उच्च राजकोषीय घाटे में योगदान देने वाले कारकों पर प्रकाश डालते हुए, ऐसे घाटे के संभावित परिणामों पर चर्चा कीजिए तथा राजकोषीय समेकन (Fiscal consolidation) सुनिश्चित करने के उपाय सुझाइए। (10 अंक, 150 शब्द)  
Highlighting the factors contributing to high fiscal deficit in India, discuss the potential consequences of such deficit and suggest measures to ensure fiscal consolidation.

(10 marks, 150 words)

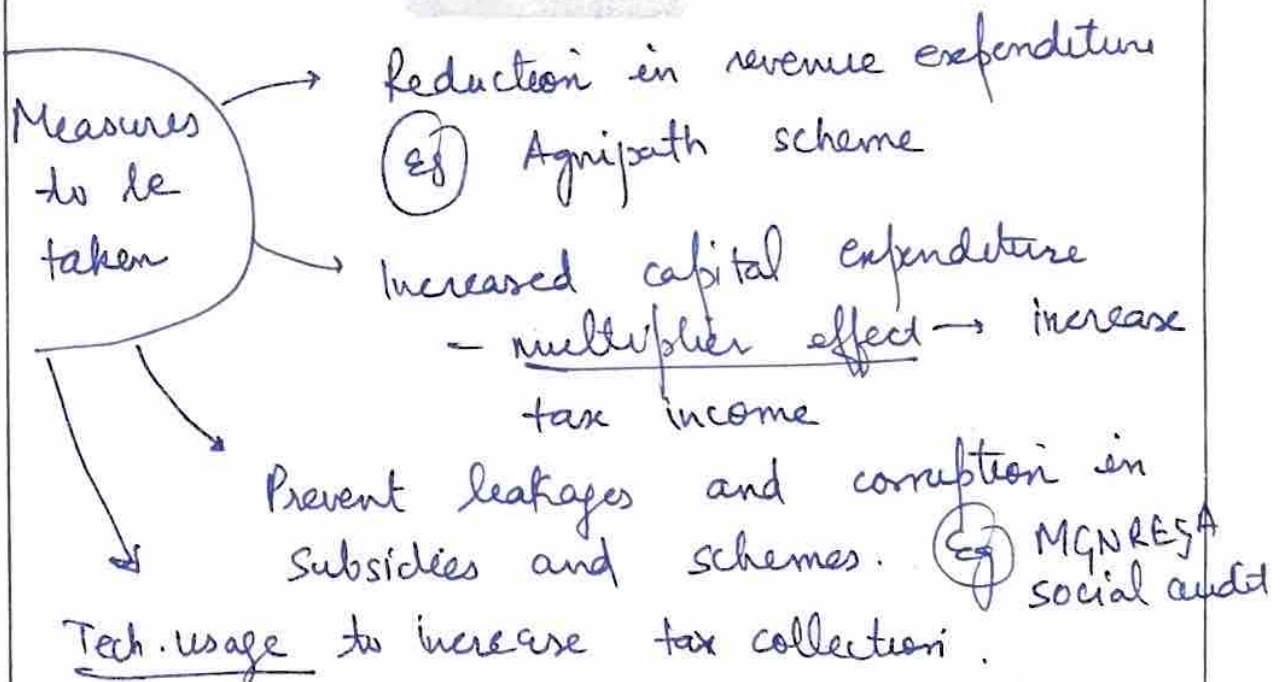
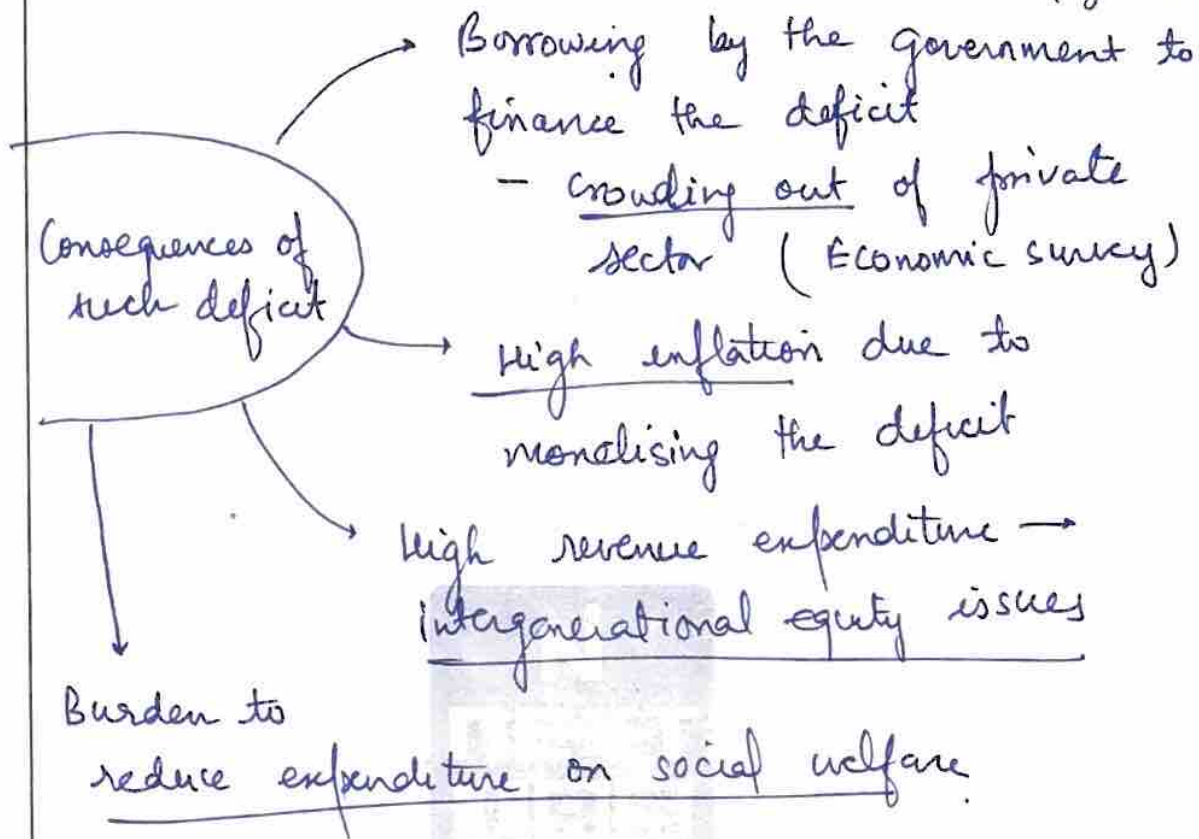
Fiscal deficit refers to the net borrowings taken by the government to finance its expenditure - revenue and capital.

Currently it is around 5.8% and the government aims to reduce it to 5.3% (Budget FY25).

Factors contributing to the high fiscal deficit

- i) low tax revenue collection by the government - direct and indirect tax.
- ii) low tax base - activities such as agriculture not included.
- iii) high revenue expenditure of the government.  
(eg) High pensions and salaries for defence.
- iv) high capital expenditure - increased from 12% to 20% of total expenditure

v) Subsidies - food, fuel and fertilisers along with expenditure in welfare schemes. (eg) PM Awas Yojana.



Government measures such as faceless tax appeals, GST, New Pension scheme are aimed at fiscal consolidation.

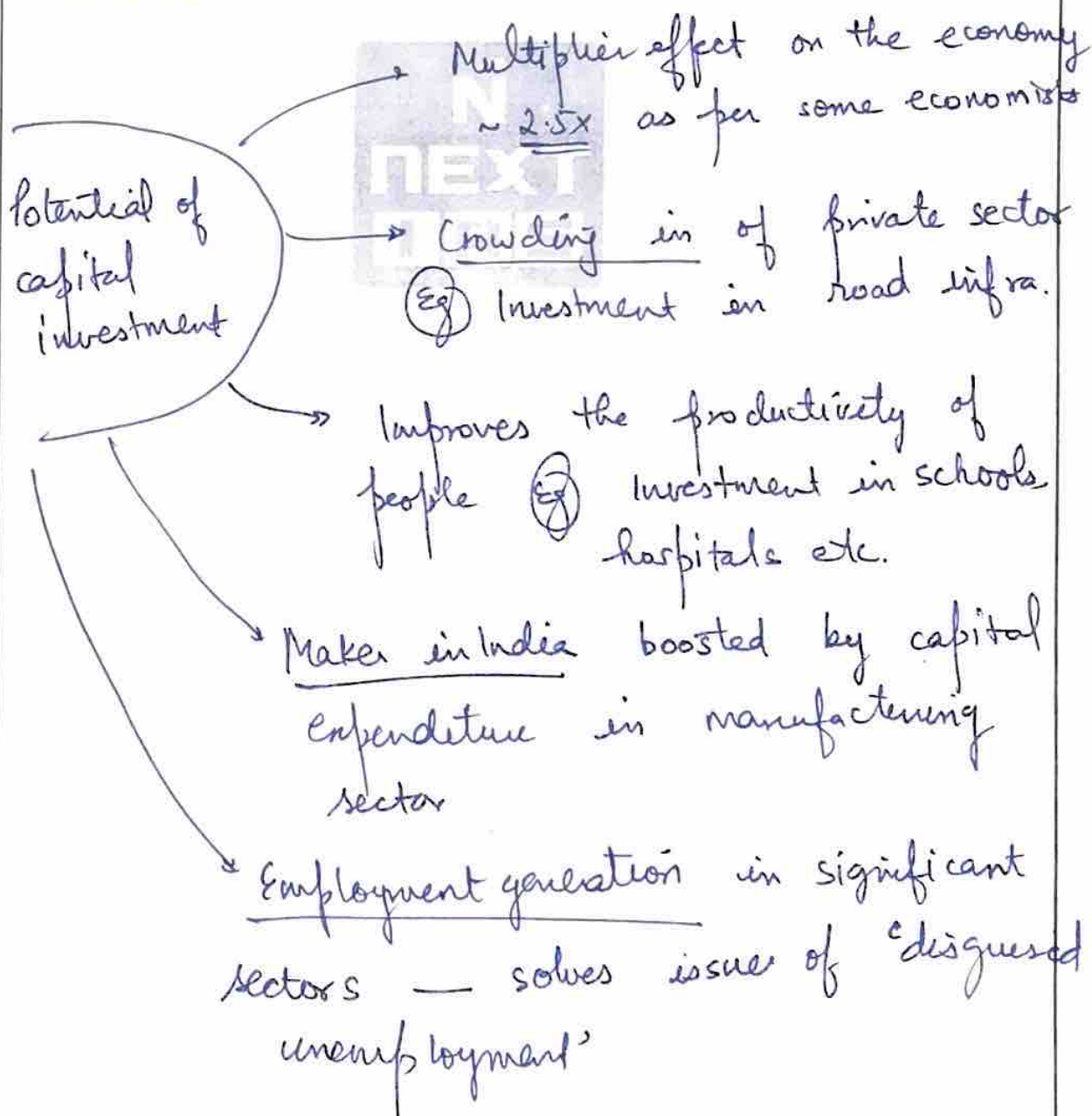
2. 2047 तक भारत के विकसित राष्ट्र बनने की आकांक्षा महत्वपूर्ण पूँजीगत निवेश पर निर्भर है। इसके आलोक में, इस लक्ष्य को प्राप्त करने में पूँजीगत निवेश की संभावनाओं पर चर्चा कीजिए। इस संदर्भ में भारत के समक्ष क्या चुनौतियाँ हैं?

(10 अंक, 150, शब्द)

India's aspiration to be a developed nation by 2047 hinges on significant capital investment. In light of this, discuss the potential of capital investment in achieving this vision. What are the challenges India faces in this regard?

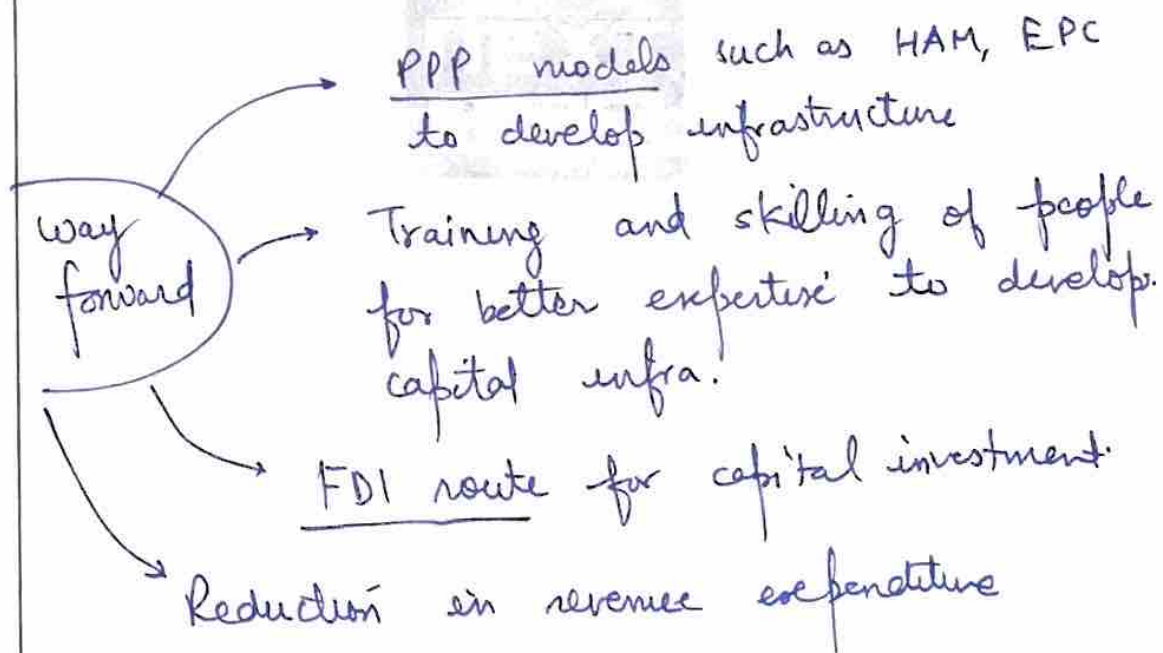
(10 marks, 150 words)

Capital investment refers to the investment in capital assets such as machinery, land etc. India aspires to be 'Viksit' (developed) by 2047 and need to invest in capital resources.



Challenges faced in this regard:

- i) low capability to invest in capital due to high fiscal deficit. def. ~5.8%
- ii) High revenue expenditure
- iii) High cost of investment — long gestation projects and lack of expertise.
- iv) lack of private sector interest.
- v) Some capital expenditure may not yield sufficient revenue.



Capital expenditure is necessary to achieve the vision of Viksit Bharat by 2047.

It follows the philosophy — 'American roads are not good because America is developed, but America is developed because American roads are good'

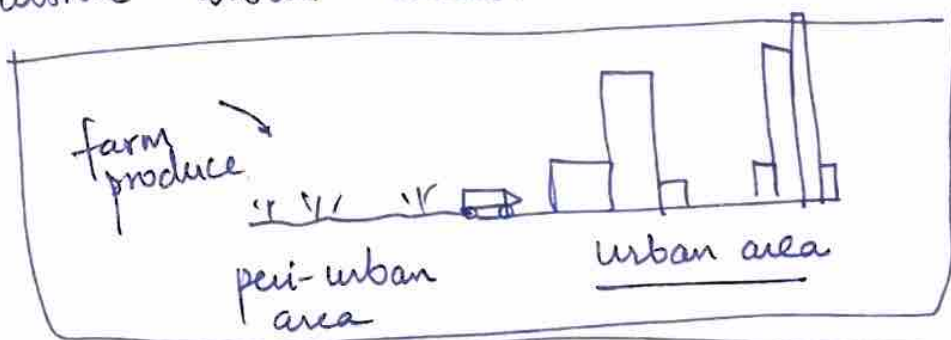
3. "नगरीकरण में वृद्धि के साथ, पेरी-अर्बन/परिनगरीय कृषि (Peri-urban agriculture) ताजा कृषि उपज की आवश्यकताओं के लिए एक महत्वपूर्ण योगदानकर्ता के रूप में उभरी है"। इस संदर्भ में, सतत रूप से पेरी-अर्बन कृषि को बढ़ावा देने से सम्बंधित अवसरों और चुनौतियों पर चर्चा कीजिए। (10 अंक, 150 शब्द)

"With growing urbanization, peri-urban agriculture is emerging as a significant contributor to fresh farm produce needs". In this context, discuss the opportunities and challenges associated with promoting peri-urban agriculture in a sustainable manner.

(10 marks, 150 words)

Urbanisation refers to the movement of people from rural to urban area. As per Census 2011, 31% of Indian population lives in urban areas and set to increase to 40% by 2035 (World Bank).

Periurban agriculture is the form of agriculture where agricultural produce are grown just outside urban areas.



Opportunities due to peri-urban agriculture

- provision of fresh farm produce to urban areas.
- Employment opportunities to people of the urban areas.

→ Reduced transit — leading to

reduction  
in wastage

reduced  
environmental emission

→ can serve as a means of agro-tourism for urban people.

Challenges  
associated

usage of water — may lead  
to water shortages for urban  
population

pressure on land resource —  
may be acquired for city  
expansion

Emissions from agriculture — nitrogen,  
stubble burning deteriorate AQI of  
cities.

way forward

Adoption of techniques such as  
aquafarming, vertical farming

cold storage infrastructure  
development

food processing to reduce wastage  
(eg) PMFME scheme

Peri-urban agriculture offers opportunities for  
reserving urban population but it needs to  
be supplemented with other techniques.

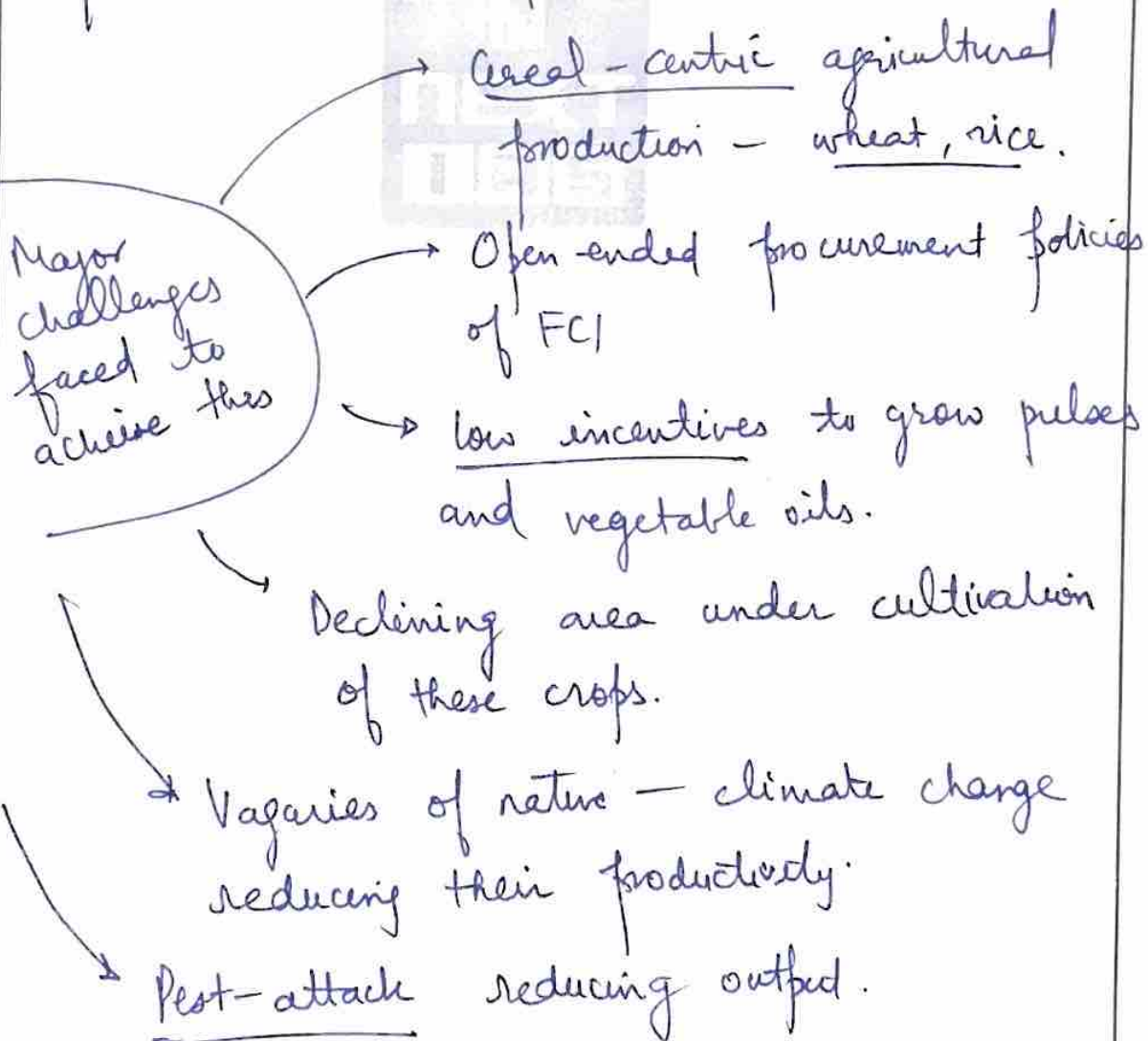
4. दालों और वनस्पति तेलों में आत्मनिर्भरता प्राप्त करने के लिए भारत के कृषि क्षेत्र के समक्ष कौन सी प्रमुख चुनौतियाँ हैं? इन चुनौतियों के समाधान भी सुझाइए। (10 अंक, 150 शब्द)

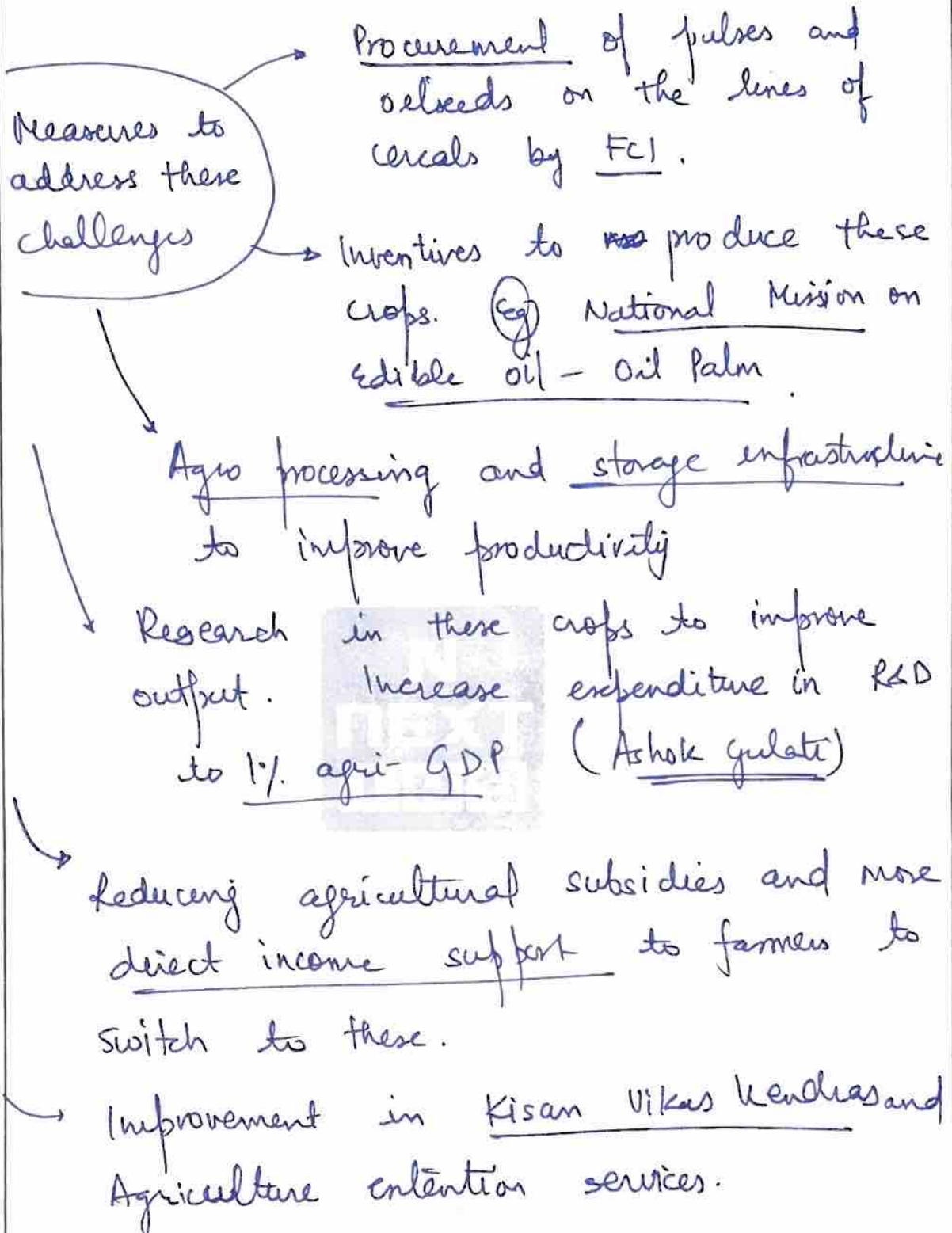
What are the major challenges faced by India's agriculture sector to achieve self-sufficiency in pulses and vegetable oils? Suggest measures to address these challenges.

(10 marks, 150 words)

India imports around half of its needs for Pulses from countries such as Mozambique, Myanmar and vegetable oil from Brazil, Ukraine, Indonesia.

This is due to low self sufficiency in the production of pulses and oils.





Improvement in farm income and diversification of crops is rooted in increasing the production of pulses and vegetable oils. Focus of government through schemes is step in right direction.

5. भारत को एक सतत हरित अर्थव्यवस्था बनाने में जैव-विनिर्माण (Biomanufacturing) और जैव-फाउंड्री (Bio-foundry) की संभावनाओं का मूल्यांकन कीजिए। (10 अंक, 150 शब्द)  
Evaluate the potential of biomanufacturing and bio-foundry in driving India's future towards a sustainable green economy. (10 marks, 150 words)

Biomanufacturing and Bio-foundry refers to the process of manufacturing and foundry utilizing the biological organism and resources.  
Eg) Use of algae to manufacture biofuels.

### Potential of biomanufacturing and biofoundry

- i) Reduce the emission from traditional sources of energy production.  
Eg) Use of biofuels — bioethanol production in 3rd generation using algae — carbon neutral.
- ii) Reduction in mining for minerals by harnessing power of biology.  
Eg) Replicating the photosynthesis process and improving the efficiency of solar energy.
- iii) Healthcare — manufacture of organs that can be transplanted.

- (eg) facts such as stem cells are utilised to manufacture organs (stem cell therapy)
- iv) Production of fast and efficient computer chips using bio-foundry
- (eg) Organoid intelligence is based on this.
- v) Highly efficient and low energy consuming process can be adopted.

### Challenges

- High technical expertise required
- low level of technology to utilise it fully
- Difficult to understand the processes fully. (eg) CRISPR cas9 still not understood fully.

### Way forward

- More research and development in this
- Education and skilling - improving STEM education enrolment.

Sustainable green economy as one of the goals of our sustainable development requires adoption of new technique. Bio-manufacturing and bio-foundry can help in this regard

6. पुनः प्रयोज्य प्रक्षेपण यान (RLV) की कार्यप्रणाली के पीछे क्या सिद्धांत हैं? भारत के अंतरिक्ष वाणिज्य में आर.एल.वी. के उपयोग के महत्व और संभावित लाभों की व्याख्या कीजिए। (10 अंक, 150 शब्द)

What are the principles behind the working of Reusable Launch Vehicle (RLV)? Explain the significance and potential benefits of use of RLVs in India's space commerce.

(10 marks, 150 words)

The successful testing of Reusable Launch Vehicle - Technology Demonstrator - Pushpak has led to increased focus on this technology.

### Principles behind the working of RLV

Majority of two types

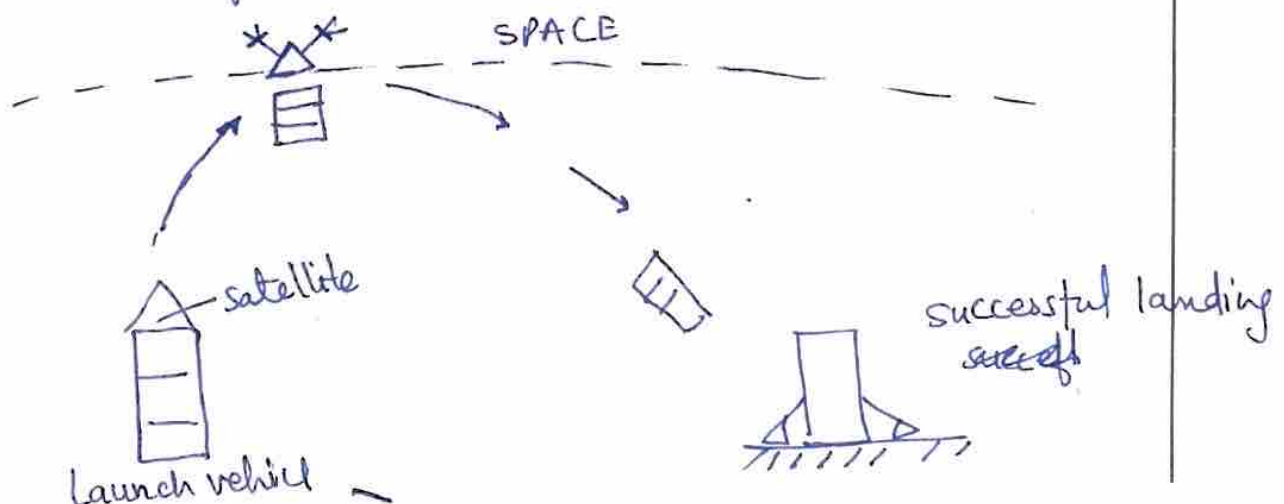
Vertical Takeoff  
Horizontal landing

(Eg) Pushpak

(Eg)  
SpaceX's  
rocket

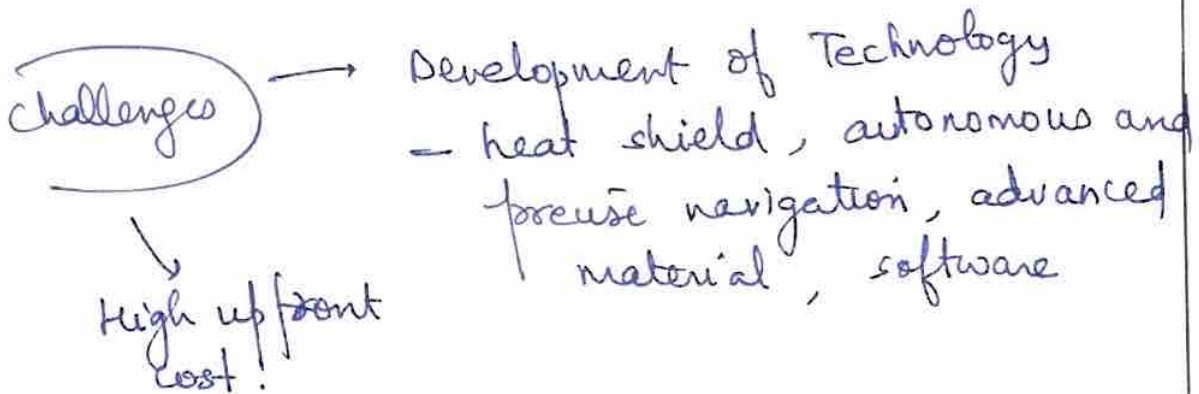
Vertical Takeoff  
vertical landing

— In this the launch vehicle after it has successfully deployed the satellite is landed back on the earth to be used for next launches.



## Significance and Potential Benefits

- i) Reduce the cost of launch ~ upto 80%  
as per ISRO ~~estata~~ estimates
- ii) More efficient use of resources.
- iii) Reduction in space debris
- iv) faster launches to space by reusing the launch vehicles
- v) Increased utilisation of space-based services
- vi) Technology could be used for defense and other strategic capabilities
- vii) Reduction in emissions due to low resource utilisation



ISRO and private companies such as SPACEX are working on the technology. This will help in several future space launches aiding in climate change mitigation, disaster management and monitoring services.

7.

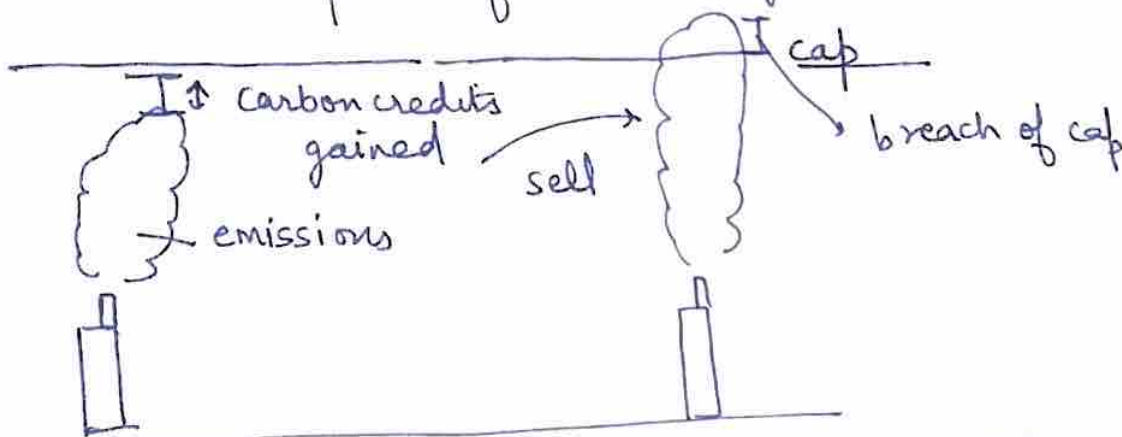
कार्बन क्रेडिट ट्रेडिंग स्कीम (CCTS) 2023 की प्रमुख विशेषताओं का परिक्षण कीजिए। भारत में हरित गृह गैस (Greenhouse gas) उत्सर्जन को कम करने की इसकी संभावनाओं का विश्लेषण कीजिए। (10 अंक, 150 शब्द)  
Examine the key features of the Carbon Credit Trading Scheme (CCTS) 2023. Analyze its potential for mitigating greenhouse gas emissions in India. (10 marks, 150 words)

According to UNEP, the temperature has risen ~~to~~ by 1.2°C due to greenhouse gas emissions and may cross 1.5°C by end of this decade.

Carbon Credit Trading Scheme (CCTS) 2023 has been launched in India to mitigate the emissions.

Key features:

- Cap on carbon emissions on the industries.
- Industries that cross the cap have to buy carbon credits.
- Carbon credits obtained by reducing the emission below a certain level.
- Platform for trading carbon credits.



Based on principle of Perform, Achieve, Trade

— The polluter pays principle forms the core of the scheme.

Potential for mitigating the greenhouse gas emissions :-

- i) Incentivises the usage of renewable energy by the company.
- ii) Adoption of processes that leads to low emission
- iii) Use of technology such as Carbon Capture and Storage (CCS) to reduce emissions.
- iv) Make the manufacturing more green.

However, there are challenges in its implementation :-

- Measuring the emissions of industries
- Establishing the standards industry specific
- Enforcement mechanism.

Carbon Trading that was first proposed in Kyoto Protocol is being implemented in the country helping to achieve the goal of Net Zero Carbon emissions by 2070.

8. पिछले दशक में हीट वेव की बढ़ती गहनता, आवृत्ति और अवधि के मद्देनजर, क्या "हीट वेव" को अब आपदा प्रबंधन अधिनियम, 2005 के तहत एक अधिसूचित आपदा के रूप में शामिल किया जाना चाहिए? (10 अंक, 150 शब्द)  
In light of the increased intensity, frequency and duration of heat waves in the last decade, do you think the time has come to include "heat waves" as a notified disaster under the Disaster Management Act, 2005? (10 marks, 150 words)

Heat waves refers to the period of abnormally high temperatures over extended duration of time. [Usually if temperature is over  $40^{\circ}\text{C}$  in plains and  $30^{\circ}\text{C}$  in hills and it is over  $45^{\circ}\text{C}$  to  $64^{\circ}\text{C}$  over the average normal.]

The intensity, frequency and duration of heat waves have increased due to:-

- i) Delayed onset of monsoon in the country
- ii) Urban heat island effect
- iii) Deforestation activities — agriculture, mining etc.
- iv) Increased concentration of greenhouse gases in the atmosphere.

Impact of heat waves

→ Reduced agricultural output — decreased yield. (Eg) As per MS Swaminathan,  $1^{\circ}\text{C}$  increase in temperature reduces wheat output by 4-5%

- Decreased productivity of workers and even death in some cases (eg) Delhi heat waves.
- Healthcare issues such as heat stroke, cardiovascular problems.
- overburden healthcare system due to increased patients.
- Reduction in economic growth due to lower tourism, productivity and output.

Therefore, there is a need to include the 'heat waves' as notified disaster. This would help in:—

- Increased emergency response due to heat waves.
- setting up of Heatwave Action Plan (HAP) by the districts and states.
- Funding from NDRF, SDRF for taking mitigating measures. (eg) shades, water availability
- coordinated planning and response
- Research in the area.

The increased intensity and frequency of heat wave disproportionately effects vulnerable sections — old, poor, women and elderly. There is a need to adopt Heat plans to counter the same.

9.

भारतीय सशस्त्र बलों द्वारा हाल ही में तैयार किए गए 'साइबर-अंतरिक्ष अभियान (Cyberspace operations) के लिए संयुक्त सिद्धांत' से पारंपरिक ऑपरेशनों के साथ-साथ ग्रे जोन युद्ध दोनों के लिए साइबर-सुरक्षा स्थिति मजबूत होगी। परीक्षण कीजिए। (10 अंक, 150 शब्द)

Recently formulated 'joint doctrine for cyberspace operations' by Indian armed forces will lead to strengthening of the cyber-security posture for both conventional operations as well as gray zone warfare. Examine. (10 marks, 150 words)

Cyberspace has become the 5th Dimension of warfare utilising the digital technology to disrupt the functioning of enemy nation.

Joint doctrine for cyberspace operations by Armed forces will help in:-

- i) Utilise the new technologies to counter cyber threats.
- ii) Formulation of special cyberforce to foil cyberattacks by the enemy nation.
- iii) Protection of critical infrastructure and classified information from cyberattacks
- iv) enhanced capabilities in case of cyber war.

Conventional — cyber war by the enemy state to disrupt the economy and functioning of the country.

Grayzone warfare — activities short of full fledged warfare to disrupt the

activities of the country.

(eg) Use of virus Stuxnet by USA to disrupt the ~~cyb~~ nuclear technology of Iran.

The doctrine will complement the existing infrastructure for cybersecurity:—

- i) legal: IT Act 2000, BNS.
- ii) Agencies — Cert-in, Multiagency Coordination Center (MAC)
- iii) NCIIPC — National Critical Infrastructure Protection center.
- iv) Tools such as — malware removal bots.

Indian army can also use counter-offensive to disrupt enemy infrastructure.

It follows the quote — "New age war will not be fought on the battlefield but in the cybers".

The emergence of newer technologies such as quantum tech, Artificial Intelligence, ML, cloud computing and supercomputer make the threats of cyberwar even more real.

The joint doctrine of Indian Army will help in this regard.

10. पाकिस्तान और बांग्लादेश से सटे राज्यों में सीमा सुरक्षा बल (BSF) के प्रादेशिक क्षेत्राधिकार के विस्तार की आवश्यकता एवं संभावित मुद्दों पर चर्चा कीजिए। (10 अंक, 150 शब्द)

Discuss the necessity and potential issues surrounding the extension of the Border Security Force's (BSF) territorial jurisdiction in states adjacent to Pakistan and Bangladesh.

(10 marks, 150 words)

Border Security Force is one of the Central Armed Police Force under Ministry of Home Affairs responsible for securing the border with Pakistan and Bangladesh.

The central government has increased the jurisdiction of the forces to cover 50 Km area from the border in Indian territory in states of Punjab and West Bengal.

Necessity  
of such  
action

→ Increased instances of terrorist infiltration along Pak Border

→ Use of drones for arms and drugs smuggling in border villages

→ Illegal Immigration of refugees and others along the borders

→ Improve the operational capabilities of Police forces (CAPF).

→ Reduce the incidences of violence and maintain internal security

Potential issues in this:

- Overlapping jurisdiction of state police and CAPF (BSF)
- ~~states as~~ police as a state subject → ~~states~~ CAPF in the jurisdiction of state.
- Lack of coordination among central and state forces reason behind the change as per experts
- past incidences of human rights issues and ~~corruption~~ by the CAPF not resolved. These could increase due to increased jurisdiction.

Way forward

- Improve the coordination between police forces of state and center
- Usage of intelligence agencies to counter threats.
- Integrated comprehensive Border Management system (ICBMS)
- Technological upgradation of the forces.

Infiltration and smuggling pose major internal security threats. Upgrading the CAPF role will help to counter threats to some extent.

11. भारत की आर्थिक विकास की कहानी प्रायः बेरोजगारी की निरंतर चुनौतियों से प्रभावित होती है। संरचनात्मक बेरोजगारी की अवधारणा का विश्लेषण कीजिए और भारत की वर्तमान आर्थिक स्थिति के संदर्भ में इसकी प्रासंगिकता पर चर्चा कीजिए साथ ही समावेशी रोजगार को बढ़ावा देने के लिए नीतिगत उपाय सुझाइए। (15 अंक, 250 शब्द)

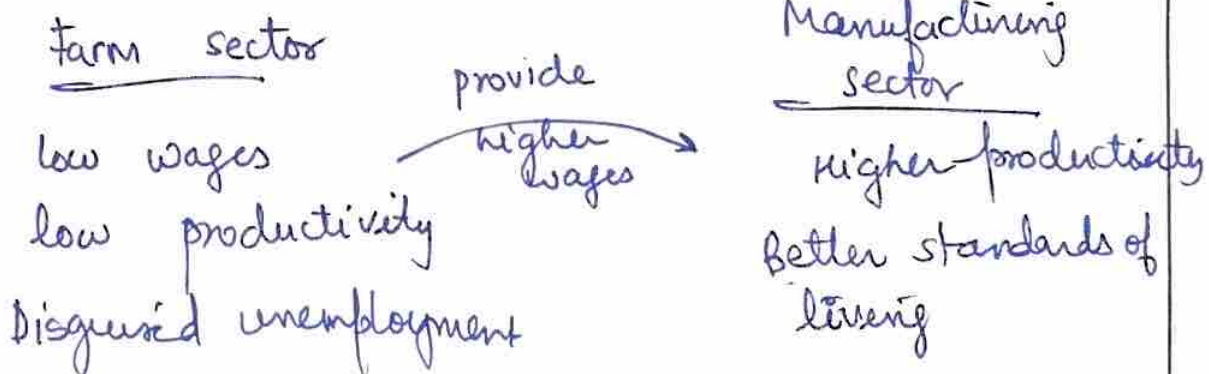
India's economic growth story is often overshadowed by the persistent challenges of unemployment. Analyze the concept of structural unemployment and discuss its relevance in the context of India's current economic situation. Suggest policy measures to promote inclusive job growth. (15 marks, 250 words)

Unemployment refers to the proportion of working age population that is unable to find work suited to their capabilities

As per PLFS report it is around 10% among youth (15-29 years).

Structural Unemployment refers to the issues in which proportion of population is working in farm sector at low wages and unable to transition to manufacturing sector.

Lewisian economy explains this transition as the country's growth take place.



## India's current economic situation

- ES 24 : 45% of workers employed in agriculture sector — 17% GDP contribution
- 12% workers employed in manufacturing sector contributing ~15% GDP

The transition from agriculture to manufacturing sector did not take place successfully and India jumped directly to service sector.  
(contributing over 50% GDP)

This has resulted in structural unemployment.

Reasons  
for this

- Rapid development of service sector post LPG reforms
- Availability of IT infrastructure providing outsourcing jobs.
- low capital investment in manufacturing sector.
- Asian countries such as Vietnam, Indonesia giving tough competition
- Chinese products — flooding the market.

Policy measures to address the issue and promote inclusive growth:

- i) Make in India scheme: Improving the manufacturing GDP — to 25% and 100 mn jobs.
- ii) Assemble in India for network products (ES).
- iii) PLI scheme incentivising the production of goods — 'Atmanirbhar Bharat'
- (Ex) Mobile phones net exporter now
- iv) Investment in capital infrastructure and formation of industrial towns.
- v) SEZs to promote export.
- vi) KoPTEP scheme to improve the product competitiveness in foreign market
- vii) Skill India Mission for skilling workers.

Improving the participation of workers by skilling them along with investment in the manufacturing will help in achieving the 'jeans to jets' capability of our country.

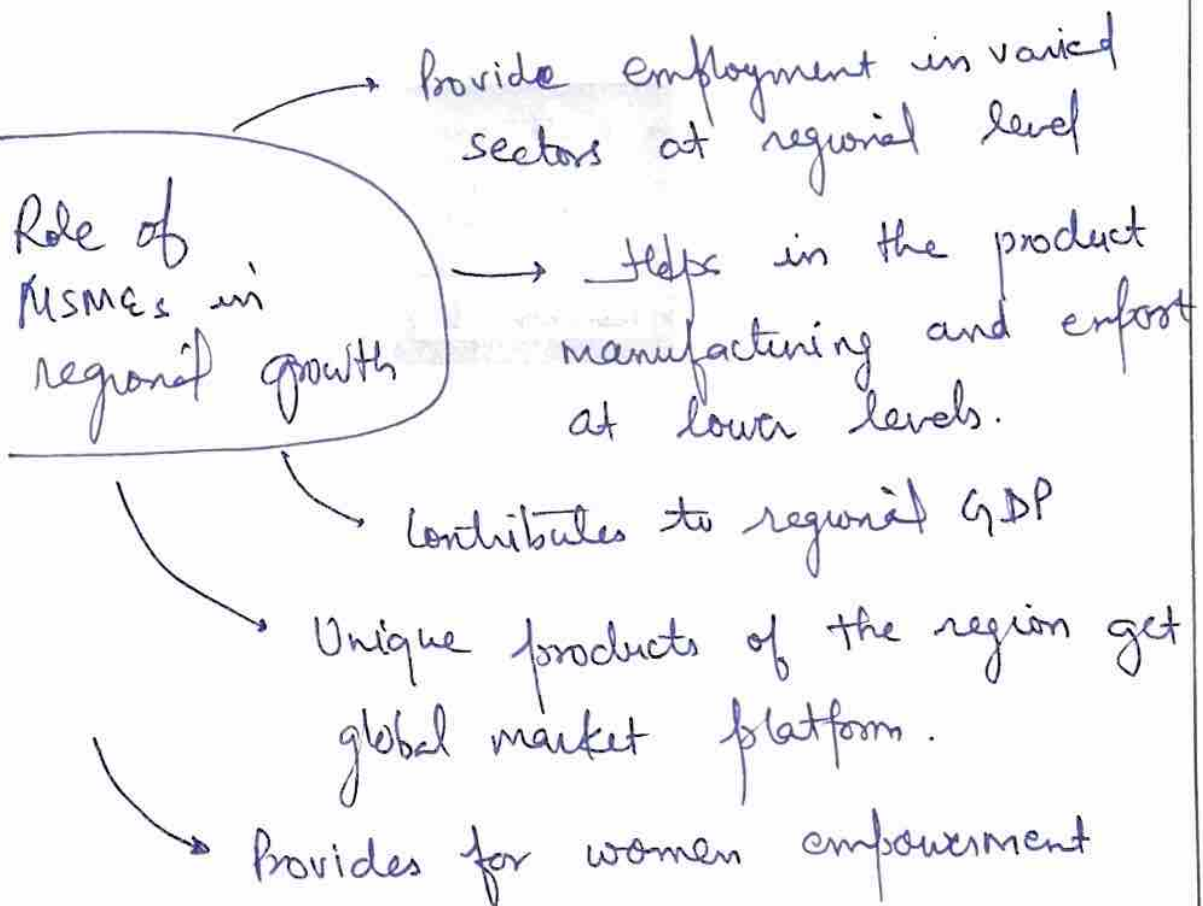
12. भारत में क्षेत्रीय विकास को बढ़ावा देने में सूक्ष्म, लघु और मध्यम उद्यमों (MSMEs) की भूमिका पर चर्चा कीजिए। औद्योगिक विविधीकरण और उन्नत प्रौद्योगिकी प्राप्त करने में डैडमे किस प्रकार योगदान दे सकते हैं?

(15 अंक, 250 शब्द)

Discuss the role of Micro, Small, and Medium Enterprises (MSMEs) in fostering regional growth in India. How can MSMEs contribute to achieving industrial diversification and technological advancement?

(15 marks, 250 words)

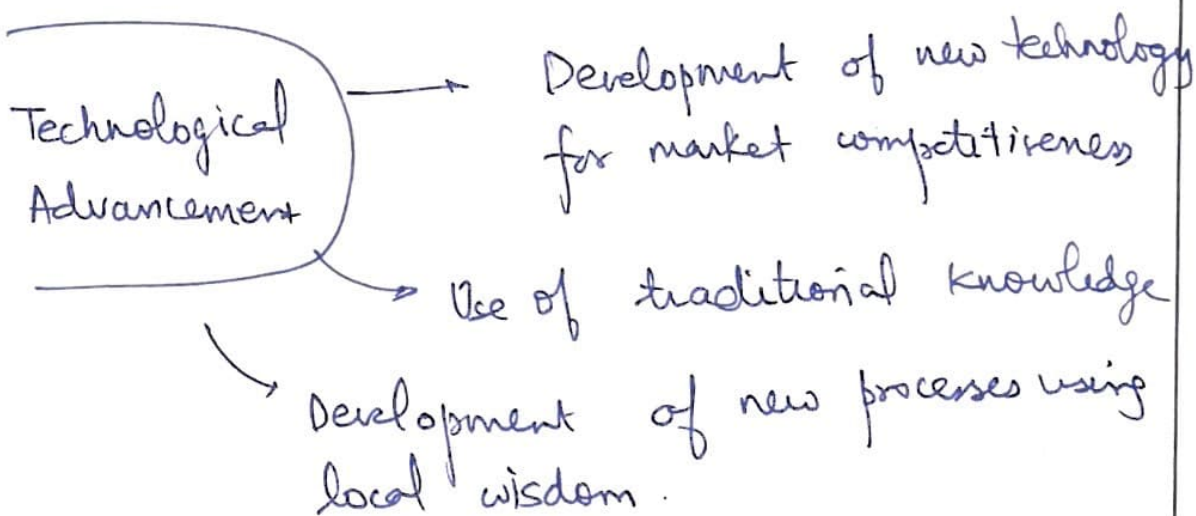
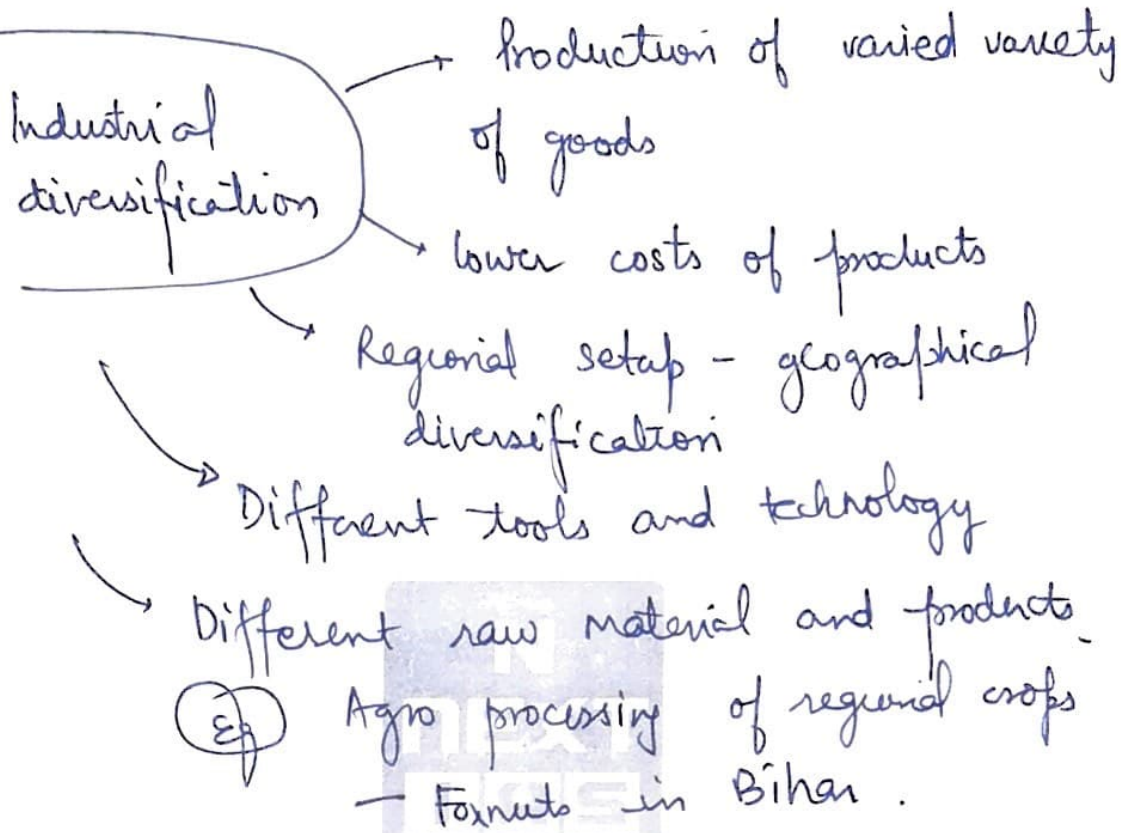
MSMEs currently contribute to around 40% exports and over 30% GDP growth and are an important contribution to the regional growth in India.



Steps taken by government :-

- MUDRA loans to improve their productivity
- Revised the MSME definition.

MSMEs can contribute to :-



However, MSMEs are hampered by following Challenges :-

i) lower economies of scale.

ii) Dwarfism — to avail government benefits  
(Economic survey)

iii) Diversity and disparities — low quality  
control.

According to economic survey, diversification of exports is due to MSMEs and a strength for the country.

This can be further strengthened by: —

- i) Sunset clause on government scheme to prevent dwarfism. (ES)
- ii) Technology infusion in MSME processes.
- iii) loan availability — improve factoring mechanism.
- iv) skilling and upskilling of MSME workers for higher productivity

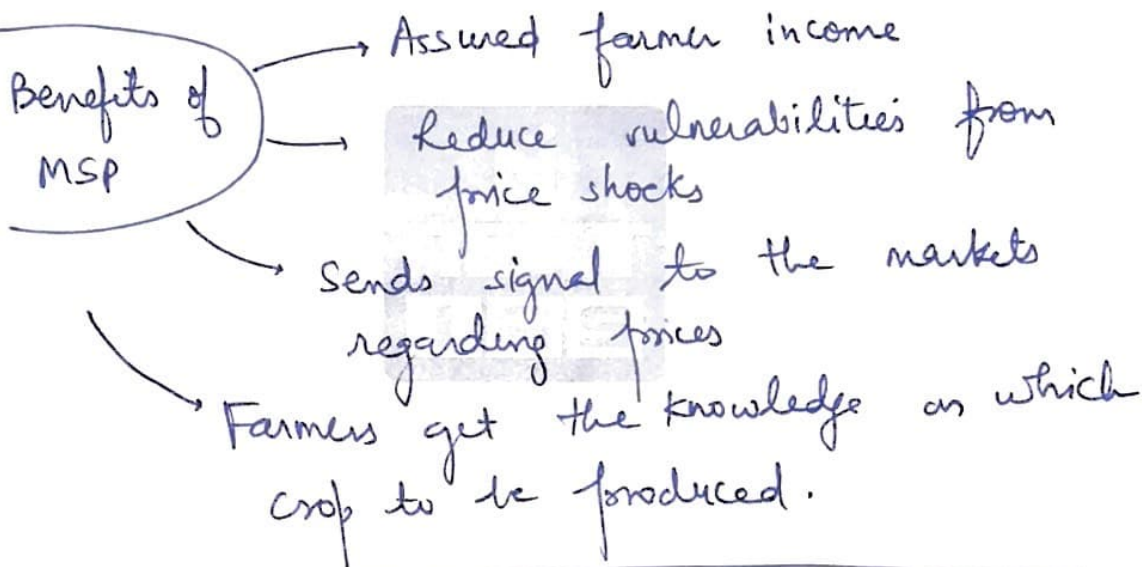
The Germany model where MSMEs produce highly specialised products can be replicated in India to manufacture regionally diverse products.

13. "MSP का एकमात्र उद्देश्य किसानों को आकस्मिक मूल्य परिवर्तन के आघात से बचाना है"। क्या आपको लगता है कि MSP को वैधानिक बनाने से किसानों को आकस्मिक आघातों से बचाया जा सकेगा? MSP आधारित खरीद को प्रभावी बनाने के लिए अन्य कौन से उपाय किए जा सकते हैं? (15 अंक, 250 शब्द)

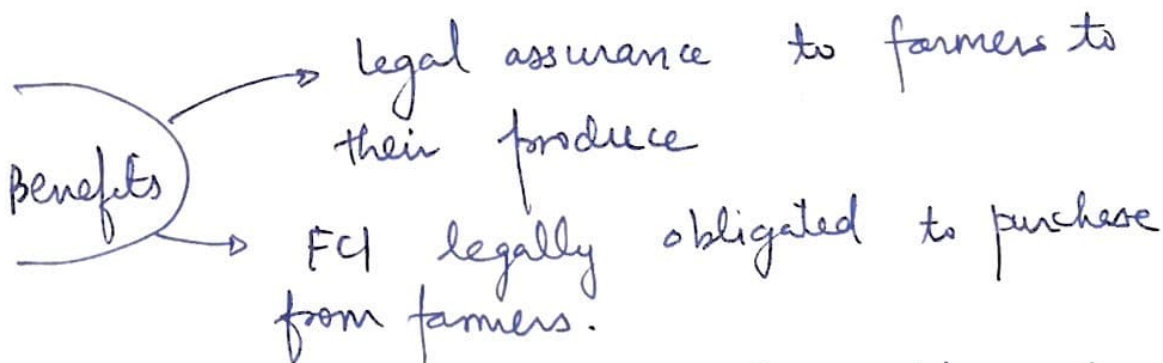
"The sole point of MSP is to protect farmers from sudden price shock". Do you think legalization of MSP can insure farmers from sudden price shocks? What are the other measures which can be taken to make MSP-led procurement effective?

(15 marks, 250 words)

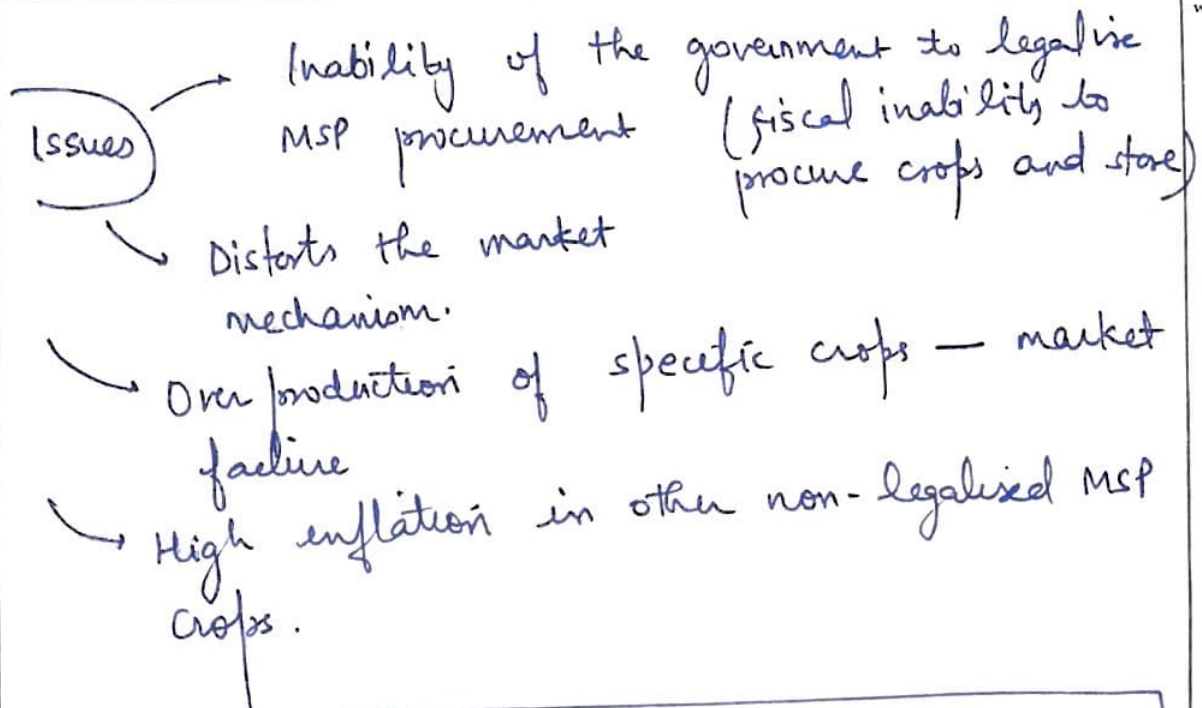
MSP - Minimum support price is the minimum amount the government pays for the procurement of 22 crops it has announced.



Legalisation of MSP will lead to:-



This will reduce the vulnerabilities of farmers from price shock.



Other Measures that can be taken are:—

i) Income support to farmers by reducing MSP and other price subsidies.

(Eg) Extension of PM KISAN.

ii) R&D in farming — improve productivity.

→ no major productivity increase since green revolution.

(Eg) As per Prof. Ashok Gulati — ₹1 expenditure in R&D → ₹5 output whereas ₹1 expenditure in subsidy → ₹0.7 output.

iii) Shift of workers from agriculture to manufacturing sector — improve incomes.

(Eg) Employee linked Incentive scheme (ELI) along with PLI aims to achieve this.

- iv) Crop diversification and reduction in cob web cobweb phenomenon.
- v) Agricultural processing to improve incomes. (Eg) Tomato, Onion.
- vi) Investment in storage infrastructure.  
(Eg) PACS grain storage initiative.
- vii) Policy certainty — banning of onion exports, Minimum export prices — hurt farmer income.
- viii) Promotion of alternate technique such as organic farming ZBNF.
- ix) Technological changes — farm mechanisation use of nano urea.
- x) Adoption of beeking — sweet revolution to augment income.

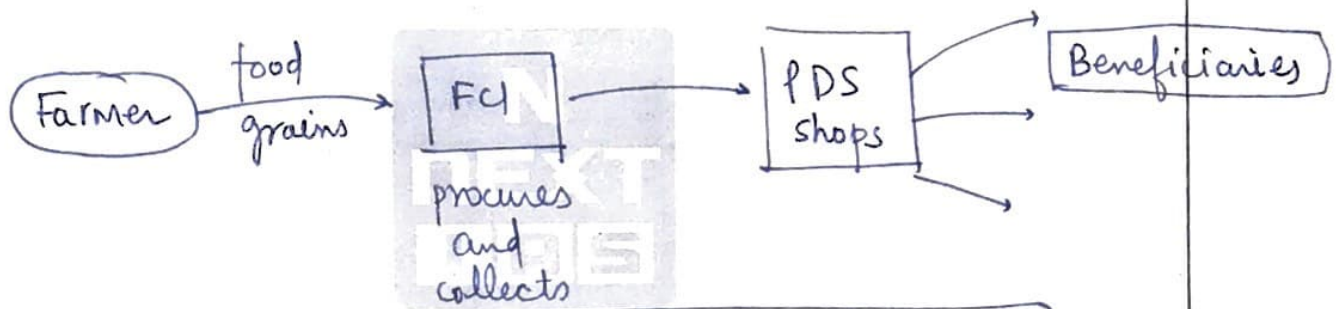
Legalisation of MSP — rather than being beneficial will lead to spiraling of issues ranging from market distortion to fiscal deficit.

Achieving food and nutritional security requires other measures.

14. भारत में खाद्य सुरक्षा सुनिश्चित करने के लिए सार्वजनिक वितरण प्रणाली (PDS) में भारतीय खाद्य निगम (FCI) की भूमिका पर चर्चा कीजिए। भारतीय खाद्य निगम की दक्षता और प्रभावशीलता को बढ़ाने के लिए इसकी कार्यप्रणाली में आवश्यक सुधारों को सुझाइए। (15 अंक, 250 शब्द)

Discuss the role of the Food Corporation of India (FCI) in the Public Distribution System (PDS) to ensure food security in India. Suggest necessary reforms in the functioning of FCI to enhance its efficiency and effectiveness. (15 marks, 250 words)

FCI plays a major role in procurement of food grains under National Food Security Act, 2013. It helps to augment the PDS system to ensure food security.



Role of FCI in the procurement and distribution:

- i) Procurement of food grains and other crops from farmers at MSP.
- ii) Storage and handling of procured food grains.
- iii) Provides the food grains to the the PDS at Issue price.

- ii) Difference in MSP and Issue price  
subsidised by the government for FCJ  
functioning. (Budgetary support).

Reasons for low efficiencies and effectiveness

- i) Lack of storage infrastructure to store  
such large quantities  
→ leads to wastage of grains
- ii) Policy of First-in-First-out - requiring  
large storage infrastructure.
- iii) Schemes such as PM Garib Kalyan Anna  
Yojana burdening FCJ finances.
- iv) Leakages and corruption - selling of the  
food grains in export markets - which were  
marked for PDS.
- v) Low technology adoption for efficient  
transportation and distribution
- vi) Central collection instead of decentralised  
model.

## Necessary reforms needed in F&I functioning

- i) Reduce the number of beneficiaries  
currently around 66%. Issue prices to be slightly higher for less poor (NITI Aayog suggestion).
- ii) Decentralised procurement and storage  
- reduction in transportation cost.
- iii) GPS tracking of the trucks to prevent leakages.
- iv) Availability of storage infrastructure to prevent the wastage.  
(eg) PACS scheme to improve storage
- v) Reduction in off-budget market borrowings to fund deficit.
- vi) Food coupons for remote beneficiaries.

Diversified procurement, decentralised model and effective distribution (Aadhar Based) can help in achieving food security and SDG 1 of zero poverty and SDG 2 of zero hunger.

15. भारत में कृषि उत्पादकता और खाद्य सुरक्षा बढ़ाने में नैनो प्रौद्योगिकी की भूमिका पर चर्चा कीजिए। नैनो-उर्वरकों और नैनो-कीटनाशकों के उपयोग के हाल के विकास/प्रगति और संभावित लाभों एवं जोखिमों पर प्रकाश डालिए।

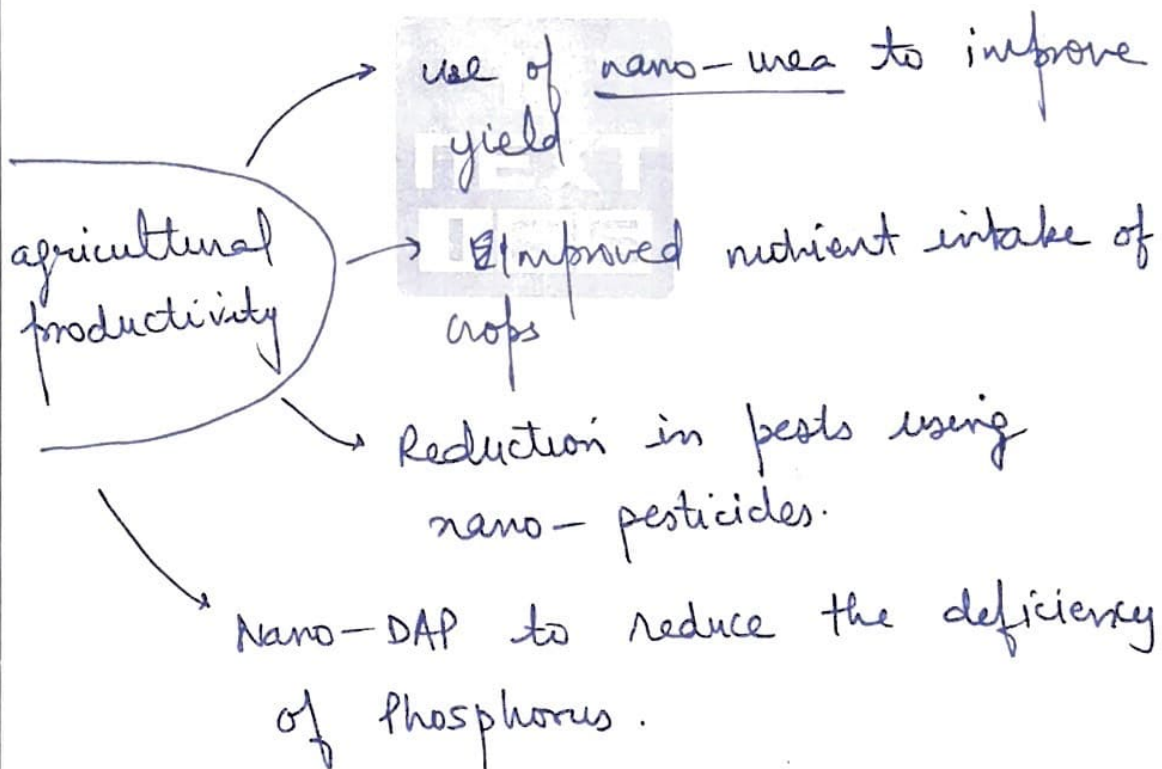
(15 अंक, 250 शब्द)

Discuss the role of nanotechnology on enhancing agricultural productivity and food security in India. Highlight recent developments and potential benefits and risks of use of nano-fertilizers and nano-pesticides.

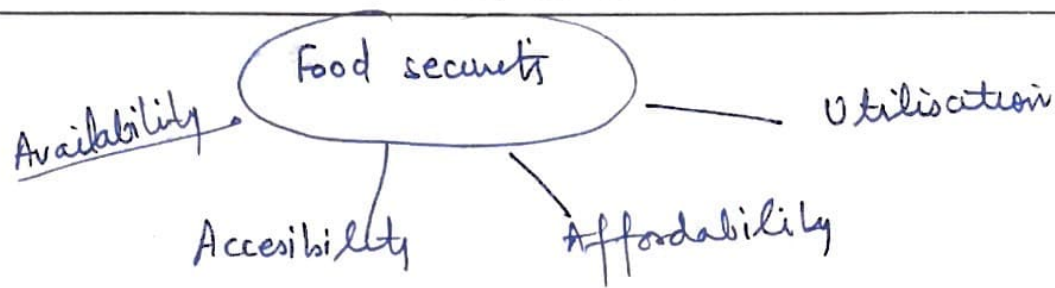
(15 marks, 250 words)

Nanotechnology refers to the utilisation of properties of particles that they exhibit at nano-scale.

Role of nano-tech in:-



This improved agricultural productivity can help in improving food security the improving availability of food.



The nano technology along with improving availability of food crops — also reduces the prices of food due to more cost efficient methods — affordability.

Enrichment of food & using nano technology can further help in utilisation aspect of food security.

### Recent developments

- nano urea being manufactured
- nano DAP (Di-ammonium phosphate)
- nano pesticides.
- nanotechnology based feed of farm animals.

### Potential Benefits

- i) Reduction in usage of urea — one 300 ml of bottle equivalent to one bag of urea.
- ii) Better and improved uptake of nutrients by the crops.

- iii) Reduced pests due to efficient killing of pests.
- iv) low nano-pesticide usage → reduced soil health issues.
- v) low emissions from fields.
- vi) Improved soil biodiversity.

### Potential Risks of usage of these

- i) long term impacts still not fully known
- ii) Bioaccumulation and biomagnification of nano-pesticide - may cause cancer.
- iii) Infiltration into groundwater or surface runoffs.
- iv) Impact on biodiversity - may harm soil microorganisms.

Nano-technology in agriculture is helping improve farm productivity. However, the full impacts of it need to be understood. Methods such as crop rotation, diversification, permaculture can help improve soil health and improve farm productivity.

16. 2023 का भौतिकी का नोबेल पुरस्कार क्वांटम डॉट्स के संश्लेषण की खोज के लिए एकिमोव, ब्रस और बावेन्डी को संयुक्त रूप से दिया गया। इस संदर्भ में क्वांटम डॉट्स के अनुप्रयोगों पर चर्चा कीजिए। (15 अंक, 250 शब्द)  
The Nobel Prize in Physics of 2023 was jointly awarded to Ekimov, Brus and Bawendi for the discovery of synthesis of quantum dots. In this context, discuss the applications of quantum dots. (15 marks, 250 words)

Quantum dots refer to the semiconductor particles that are 2-10 nm in size and display photoluminescence.

These size dependent property of the quantum dots are responsible for their varied application.

### Application of quantum dots

i) Photoluminescence and tunable emission property utilised in electronic appliances and their display.

(eg) Quantum LEDs TVs.

ii) Healthcare - as reliable marker for detection of disease and drug delivery.

iii) Energy sector - Quantum dots can be utilised on solar panels for improving their efficiency.

iv) Sensors and signalling - small sensors based on quantum dots to

detect and emit signals.

v) low power consumption and improving  
efficiency of appliances.

(Eg) Replacing LCDs with Quantum Dots based  
display.





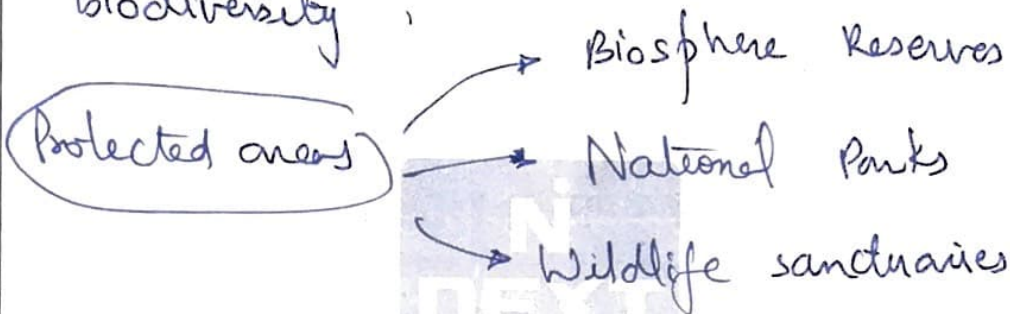
17. भारत में जैव विविधता संरक्षण में आरक्षित क्षेत्रों (Protected areas) की भूमिका का मूल्यांकन कीजिए। भारत की जैव विविधता को संरक्षित करने में राष्ट्रीय उद्यान, वन्यजीव अभयारण्य और बायोस्फीयर रिजर्व (जैवमंडल निचय) कितने प्रभावी रहे हैं?

(15 अंक, 250 शब्द)

Evaluate the role of protected areas in biodiversity conservation in India. How effective have national parks, wildlife sanctuaries, and biosphere reserves been in preserving India's biodiversity?

(15 marks, 250 words)

Protected areas are defined under the  
wildlife Protection Act 1976 and play  
significant role in the conservation of  
biodiversity.



Role of protected areas in biodiversity  
conservation

- i) Provides for the protection of pristine habitats of these areas from activities such as — mining and agriculture.
- ii) Focus on the key species — endangered for their protection.

(eg) Namdapha National Park in  
Arunachal Pradesh for flying  
squirrel

- iii) Protection of endangered species such as —  
Golden langur, Hangul and Lion Tailed Macaque.
- iv) Protects areas from deforestation and similar activities.
- v) Lowers the interference and interaction of human in these areas — reduction in man-animal conflict.

### Shortcoming of biodiversity areas:-

- i) Restriction of ranges of the species which may venture out. (Eg) Tiger, Cheetah.
- ii) Unclearly defined boundaries  
(Eg) Aravali Biodiversity park — leading to illegal mining in the area.
- iii) Not properly marked buffer zones and core areas.
- iv) Smuggling and trafficking of animals.
- v) Restriction of activities of traditional forest dwellers.
- vi) Bureaucratic approach rather than Joint management utilizing traditional knowledge.

Effectiveness of the protected areas:-

- i) Improved population of endangered species such as Tiger — over 3000 in numbers.
- ii) Protection of some endangered species on the verge of extinction
- iii) Some species have seen decline despite their protection. (eg) Great Indian Bustard.
- iv) Increase in the area of protected sites — showcasing empathy and 'one earth, one family' approach.

Measures that can be further taken

- i) Declaration of areas of biodiversity in consultation with local communities.
- ii) Joint management of forest utilising knowledge of tribals  
(eg) Bishoi community and Blackbuck.
- iii) Improving forest cover and reducing emission to decrease climate change effects.

'Vasudhain Kutumbakam' philosophy along with Panchamrit approach of the government can further help to improve biodiversity conservation approach.

18. भारत में पार्टिकुलेट मैटर (PM<sub>2.5</sub> and PM<sub>10</sub>) और ओजोन प्रदूषण के उच्च स्तर होने के क्या कारण हैं? पार्टिकुलेट मैटर और ओजोन प्रदूषण को कम करने के लिए सरकार द्वारा किए गए विभिन्न प्रयास कितने प्रभावी रहे हैं?

(15 अंक, 250 शब्द)

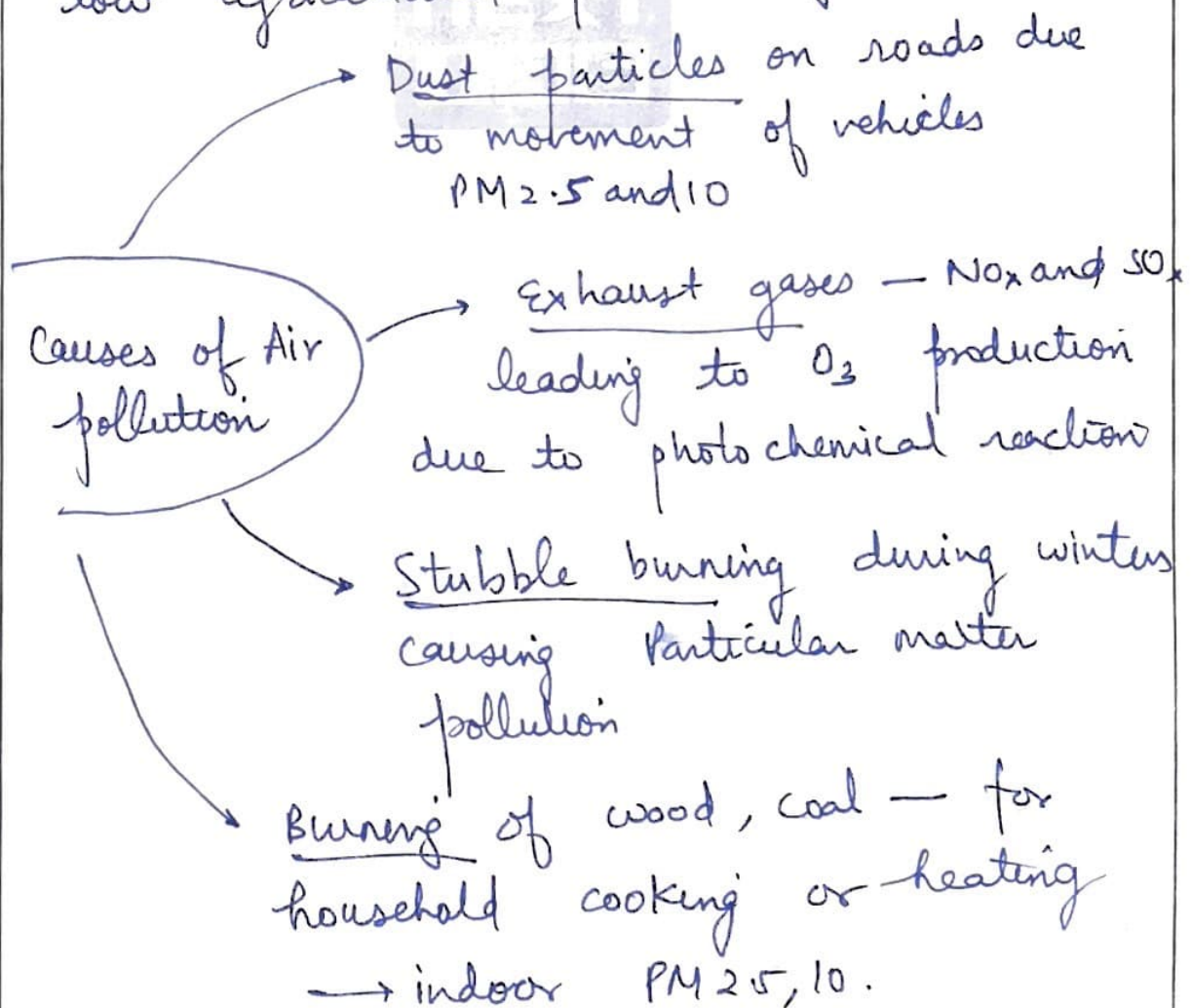
What the causes of high levels of particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) and ozone pollution in India. How effective are the various steps taken by the government to mitigate particulate matter and ozone pollution?

(15 marks, 250 marks)

According to WHO over 7 million people are prematurely dying every year ~ 2 million Indians due to Air pollution.

PM<sub>2.5</sub> and PM<sub>10</sub> are the small particles that can infiltrate respiratory organs.

Ozone pollution - due to ground level ozone is responsible for issues such as asthma, low agricultural productivity.



- Industrial burning of biomass
- Burning of waste - plastic and biodegradation releasing PM and other gases.
- Dust and sand storms ~~are~~ in the summer season

### Steps taken by the government

- i) National Action Plan on Climate Change
  - a) National solar Mission, National wind Mission  
→ production of electricity from renewable sources.
  - b) Green India Mission - <sup>Trees.</sup> reduce the dust by acting as barriers
  - c) National Energy Efficiency Mission.
- ii) National Clean Air program (NCAAP)  
Reduce PM<sub>2.5</sub> and PM<sub>10</sub> by 40% by 2026 from 2017 levels.
- iii) Air quality monitoring systems
- iv) SAFAR weather forecast
- v) Graded Response Action Plan (GRA)
- vi) Odd-even formula.

- vi) National EV policy - reduce exhaust emission
- vii) Ban on stubble Burning.

### Effectiveness of the steps taken by government

#### Positive

- Reduction in PM<sub>10</sub> and PM<sub>2.5</sub> in the cities such as Delhi
- (Eg) More days of less pollution in 2023 compared to 2022.
- Increased capacity of RE generation  
~66 GW solar energy produced

#### Lacunae

- underutilisation of fund under NCAP - (PSC report)
- Increasing private vehicles in major cities.
- Vagaries of nature - increasing climate change disasters supplementing issues of pollution.

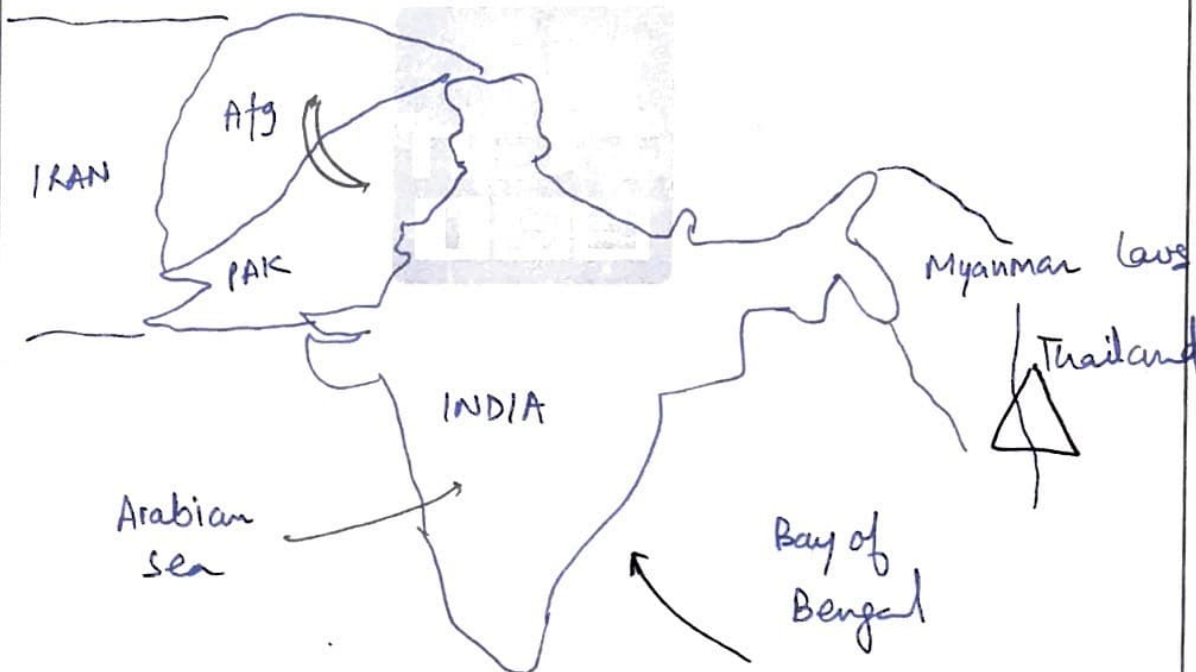
Air pollution causes several respiratory issues and organ failure. It leads to reduced life expectancy ~ 5.9 years (WHO).

Improved public transportation, clean fuel and lifestyle changes (LIFE) are needed to abate the pollution.

19. अंतर्राष्ट्रीय नारकोटिक्स नियंत्रण बोर्ड (INCB) रिपोर्ट 2023 दक्षिण एशिया में मादक पदार्थों की तस्करी के बढ़ते खतरे को प्रदर्शित करती है, जिसका कि भारत एक प्रमुख केंद्र है। भारत के संदर्भ में इस चुनौती के विभिन्न आयामों का विश्लेषण कीजिए। साथ ही, इससे निपटने के लिए बहु-आयामी दृष्टिकोण भी सुझाइए। (15 अंक, 250 शब्द)

The International Narcotics Control Board (INCB) Report 2023 highlights a growing menace of drug trafficking in South Asia, with India being a major hub. Analyze the various dimensions of this challenge with respect to India. Also suggest a multi-pronged approach to address it. (15 marks, 250 words)

The recent seizure of over 12,000 tonnes of drugs by NCB and Indian Navy joint operation showcases the menace of drug smuggling in South Asia.



### Causes of Menace of drug trafficking

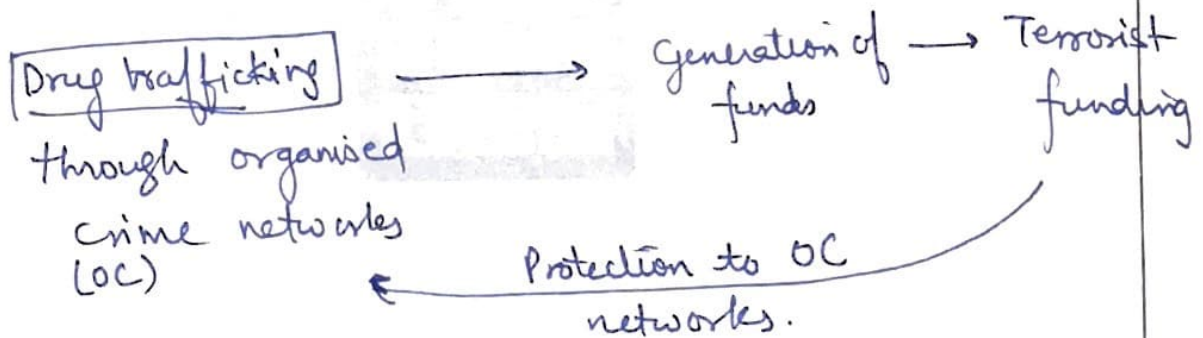
- i) Position of India between Golden Crescent and Golden Triangle.
- ii) Existence of organisation such as Tamaat -i- islami operating drug

smuggling issue

- iii) Taliban takeover of Afghanistan and coup in Myanmar increase the menace
- iv) Geo-economic crisis in Pakistan.
- v) Pakistan supplying drugs through —  
drone technology — dropping cross border
- (eg) Pakistan strategy to destabilise India through drug addiction.

### Challenges of drug trafficking:

#### (i) Narco-terrorism



- ii) Addiction among youth — declining the opportunity from demographic dividend.
- iii) Illegal money generation — Money laundering network (black money).  
placement —> layering —> integration.
- iv) Rise in cross border infiltration — affecting security of the country.

Therefore, a multipronged approach is necessary to reduce the menace:-

i) Supply reduction :

- Integrated comprehensive Border Management
- Drone surveillance
- Legislations - PMLA, NDPS Act and their implementation

ii) Demand reduction

- strict enforcement of NDPS Act
- Awareness generation on harmful effects
- Gainful employment opportunities to youth
- (Eg) Himayat scheme - upskilling J&K.

iii) Harm reduction

- deaddiction programs
- de-stigmatising the drug addiction
- community support

Drug menace has led to several youth being addicted across the border and leading to internal security challenges as well. A multipronged strategy will help in this regard.

20. वामपंथी उग्रवाद के प्रति भारत की प्रतिक्रिया (कारवाई) में नक्सलवाद के मूल कारणों को दूर करने के लिए कठोर सुरक्षा उपायों के साथ-साथ सामाजिक-आर्थिक नीतियों और संवाद जैसे नरम दृष्टिकोणों/उपागमों (Soft approaches) को एकीकृत करने की आवश्यकता है। चर्चा कीजिए। (15 अंक, 250 शब्द)

India's response to left wing extremism needs to integrate soft approaches like socio-economic policies and dialogue along with hard security measures to address the root causes of Naxalism. Discuss. (15 marks, 250 words)

Left wing Extremism refers to the adoption of violent means influenced by extremist ideology to overthrow the established government.

### Root causes of LWEs

i) Grievances of locals (mostly tribals) channelised by the LWEs leaders to use violent means.

ii) Displacement due to development programs leading to loss of culture — detribalisation

iii) Exploitation and discrimination of people.

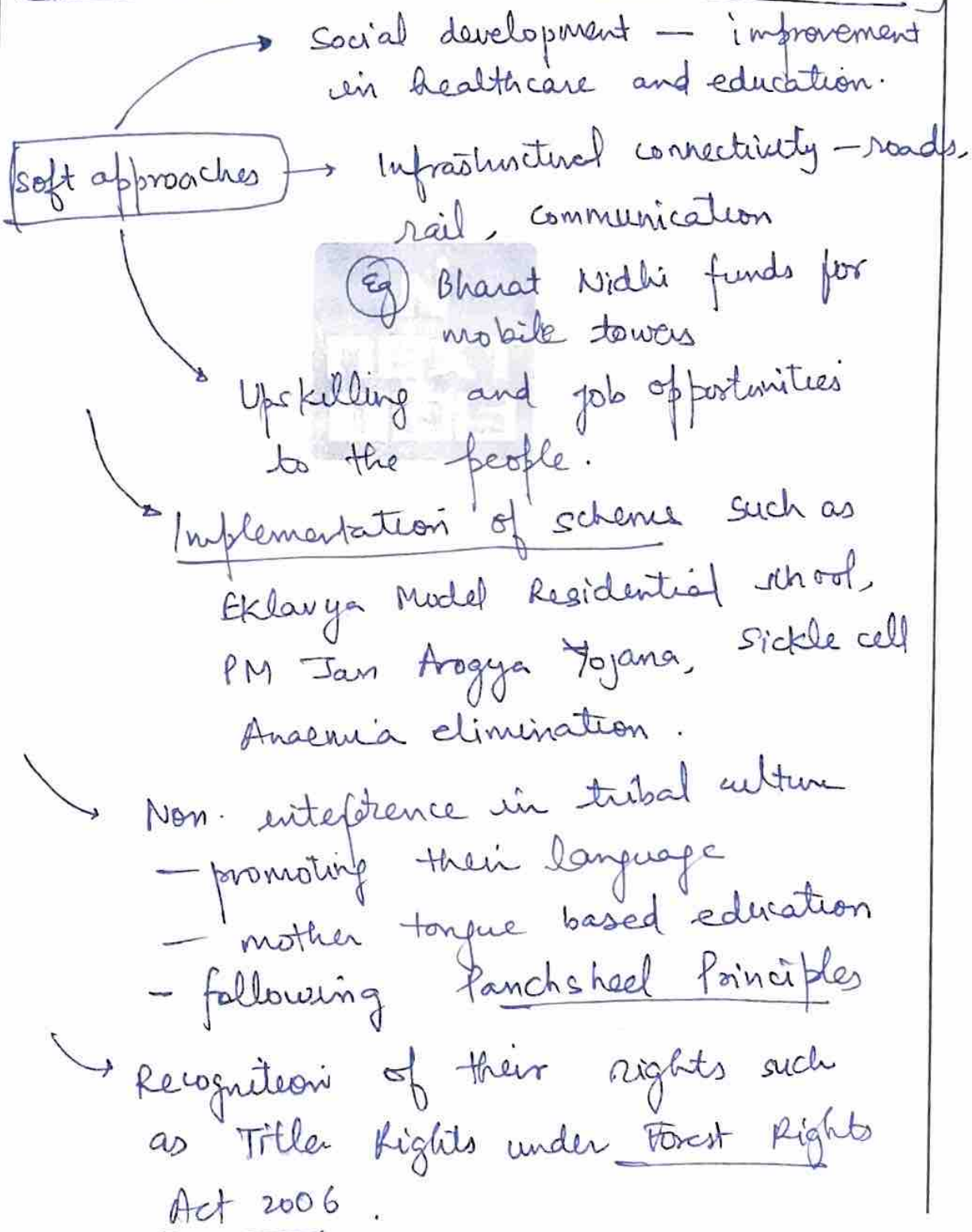
iv) Lethargy and improper implementation of government scheme and program for equitable development.

v) Regional disparities in development.



- vi) Bureaucrat - politician nexus for selfish gains → corruption etc.
- vii) External support and funding to destabilise the country. (2.5 warfare strategy - NSA Doval)

### Measures needed to address the root cause



Hard security  
measures

operations to neutralise the  
naxalists.

(eg) Recent killing of over 30 naxals  
in an operation.

Setting up of armed forces infrastructure  
in the naxal areas.

forced laying-down of arms and surrender

(eg) Operation greyhound.

### Impact of Naxalism

- Hindrance to socio-economic development  
of the country
- law and order issues — affecting investments
- Challenge to internal security of the country.
- Radicalisation of people by extremist  
ideology.
- Breeding of other activities — trafficking  
of arms and drugs, extortion to fund  
violence.

A comprehensive approach therefore is necessary  
which includes soft approach as well as  
hard security measure to tackle Naxalism.

SAMADHAN strategy can help as multipronged  
approach in this regard.

**NEXT IAS**

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*Space for Rough Work*