

NEXT IAS

GS MAINS ADVANCED COURSE 2024

(To be filled by candidate)

TEST CODE : GSMAC2403

Test No. : 03

Name of Candidate: UTKARSH YADAV Mobile No.

Roll No. : GSMAC24A1377 Start Time 9:33 End Time 5:33

Date of Examination: 18th 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।

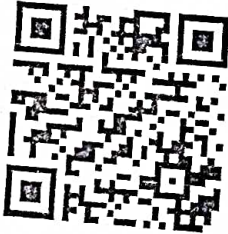
REMARKS:

FOR OFFICE USE ONLY

<u>Student Concerns / Query</u>	<u>Evaluator's Feedback / Response</u>
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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>	
 Topper's Copy	 Common mistake and Correct Filled QCAB
 Copy Scanner App	 Next IAS Test Centre Location

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)

The fiscal deficit target of the Budget - 2023 was around 4.9 % and government is on path to fiscal consolidation as per FRBMA Act.

Reasons for high fiscal deficit

- ① Social sector spending on health, education for vast 1.4 bn population requires resources.
- ② Welfare subsidies like food subsidy (2 lakh crore), fertiliser subsidy (80k cr) etc increase deficit.
- ③ Need for capital formation to boost infrastructure for economic growth.
 ↳ creates resource demand
- ④ Limited taxation revenue, i.e. close to 16% of GDP and only 4% voters pay tax ⇒ leads to less resource mobilisation.

Potential Consequences

- ① Leads to high borrowings creating burden on future generations
- ② Impacts macro economic stability.
 Ex → High fiscal deficit was one reason for BOP crisis in 1991.
- ③ Limits government spending potential towards poverty alleviation and infrastructure

Measures for fiscal consolidation

- ① widening the tax base
- ② rationalising welfare expenditure by better targeting Ex → JAM trinity
- ③ Improve tax collection efficiency
- ④ Governance reforms like RTI, social audit, etc to reduce wastage.

The above steps will ensure more fiscal space and improved macro-economic stability.

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)

India has set a target of becoming a 30 trillion economy and achieving developed nation status by 2047 i.e. Viksit Bharat goal.

Potential of Capital Investment in achieving developed status.

→ Capital investment involves investment in infrastructure like roads, ports, railways, airways along with digital infrastructure.

- ① It will lead to increasing the future productive capacity of economy.
- ② Job-creation: More investment in asset creation will lead to direct and indirect jobs → solve for jobless growth.
- ③ Improve logistics: Current logistics is 14% of GDP due to poor

in infrastructure, improving capital investment will lead to better logistics.

④ Export earnings: India can become a part of global value chain by improving logistics performance $\Rightarrow$ improves trade balance.

Challenges
faced
by India

① Limited resources due to high fiscal deficit (4.9% in Budget - 2023)

② Skill Gap: 48% Indian educated youth not employable as per India Skill Report

③ Challenges in land acquisition and bureaucratic red tape in infrastructure projects.

To address these challenges, PM Aatmanirbhar Bharat initiative has been launched to ensure integrated planning.

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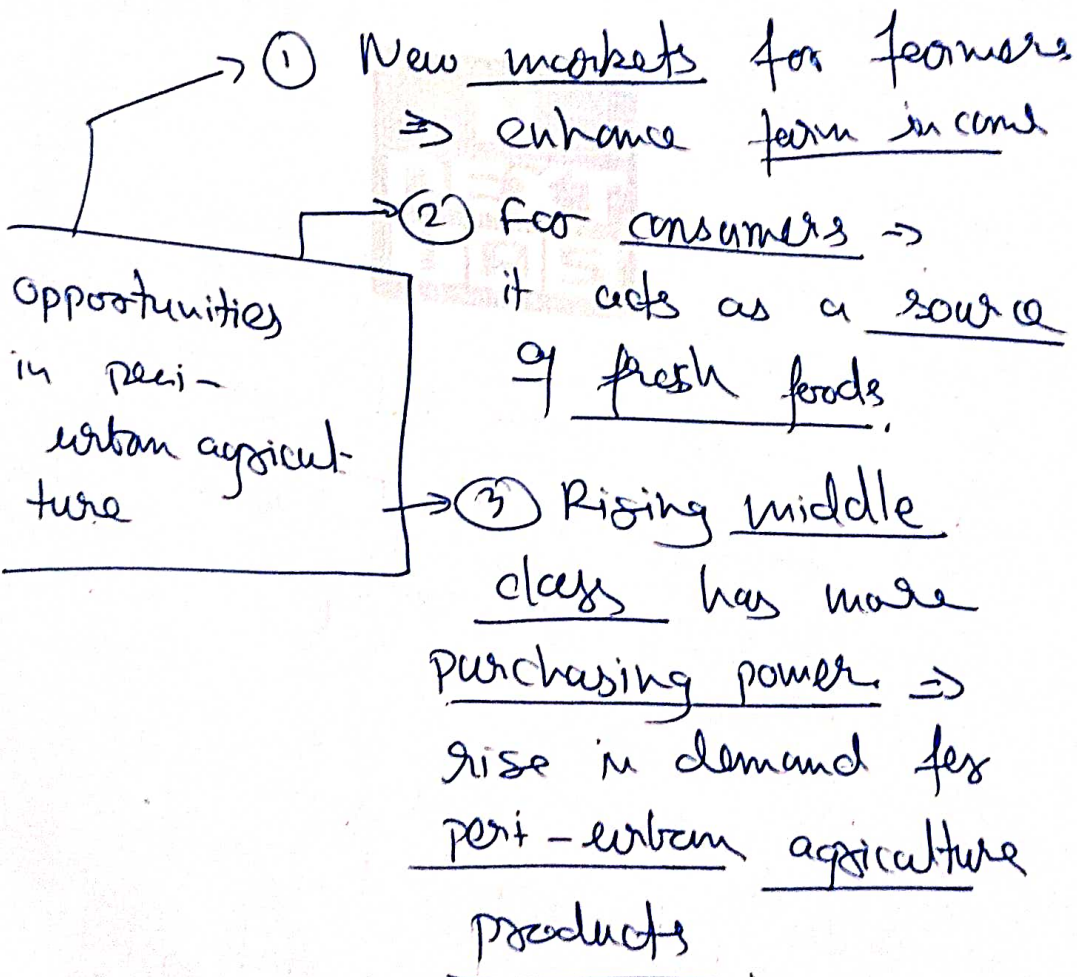
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3. "नगरीकरण में वृद्धि के साथ, पेरी-अर्बन/परिनगरीय कृषि (Peri-urban agriculture) खाद्य कृषि उपज की आवश्यकताओं के लिए एक महत्वपूर्ण योगदानकर्ता के रूप में उभरी है।" इस संदर्भ में, यलत रूप से पेरी-अर्बन कृषि को बढ़ावा देने से सम्बन्धित अवसरों और चुनौतियों 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)

Peri-urban agriculture aims at specifically targeting urban customers by growing crops in nearby rural areas.



- Challenges
- ① Logistics remains a challenge due to poor backward and forward linkages.
 - ② Large number of inter-mediarities in supply-chain ⇒ high price for consumers.
 - ③ Limited cold-chain and warehousing ⇒ high levels of wastage.
 - ④ Concerns of heavy use of pesticides.

These challenges can be overcome by improving supply chain efficiency and promoting national agriculture markets via

e-NAM

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)

In India, agriculture contributes to 18% GDP, employs 45% population and our agricultural export was \$54bn in 2023.

Despite that there is lack of self sufficiency in pulses and oil seeds. India is largest importer of oil seeds like palm oil.

Challenges faced in achieving self-sufficiency

① Skewed MSP policy: higher MSP for wheat and rice and neglect of pulses and oil seeds

↳ farmers don't find them remunerative.

② Monsoon dependence: Even today, 45% of net sown area is agriculture monsoon dependent → limits productivity.

- ③ Limited R&D on HYV seeds of pulses and oil seeds keeps productivity low.
- ④ Demand Challenge: PDS grains include majorly wheat and rice. This limits the market demand for pulses and oil seeds.

Measures to address these challenges

- ① Diversification of MSP procurement to include pulses and oil seeds.
- ② Creating a national agricultural market to increase demand. Ex e-NAM.
- ③ Providing price support scheme to farmers Ex PM- ASHK scheme.
- ④ Providing subsidised inputs like seeds, fertilisers, etc.

Ex National Edible Oil Mission

Self sufficiency in pulses and oil seeds will not only ensure food security but also nutritional security.

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)



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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)

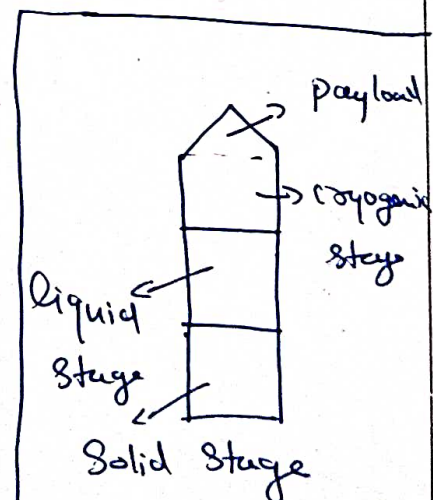
What are the principles behind the working of Reusable Launch Vehicle (RLV)? Explain the significance and potential benefits of use of RLVs in India's space commerce.

(10 marks, 150 words)

Indian Space Research Organisation
(ISRO) has recently tested Pushpak,
India's indigenously developed
Reusable Launch Vehicle - Technology Demonstrator
(RLV-TD)

Principles Behind working of RLV

- ① RLV aims to reuse the lower stages of rocket for future missions along with engine.
- ② When the rocket is fired, part of its mass is detached to propel rocket further.
- ③ The solid stage of the rocket in normal launches was earlier dropped into the ocean and remain unused.



- ④ In RLV technology, the solid state along with the engine is returned back for reuse in future missions.

Significance and Potential Benefits

- ① Lowering the cost per launch of each mission.
- ② Make Indian space programme more competitive in price $\Rightarrow$ attract global customers for launches.
- ③ India can take a leap frog in capturing global space launch market.
- ④ Technology transfer to private sector will give boost to private sector space startups.
- ⑤ Promote R&D
- ⑥ attract more youth to India's ambitious space programme
- ⑦ enhance India's global image

other benefits

Thus, RLV-TD is a major technology leap for India's space programme.

7. कार्बन क्रेडिट ट्रेडिंग स्कीम (CCTS) 2023 की प्रमुख विशेषताओं का पश्चात 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)

The Carbon Credit Trading Scheme aims at creating a national carbon trading market to reach India's target of Net-zero by 2070.

- Key features
- ① Integrates all fragmented carbon-markets into single market
 - ② The price of carbon credits will be market determined.
 - ③ Scheme will also include Renewable Purchase Obligation (RPO) and PAT certificates.

Potential in mitigating greenhouse gas

- ① It promotes a market-based mechanism, thus creating

market incentives to reduce
greenhouse emissions.

- ② Those investing in green technologies
can earn and trade carbon
credits from trading scheme.
- ③ The financial incentive provided
will spur innovation and R&D
in green energy.

Thus, the scheme can be
a stepping stone to achieve
India's aim of de-carbonisation
and reach its Paris and Glasgow
pact commitments.

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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)

IPCC 6th Assessment Report suggests that global temperature rise has crossed 1.1°C from pre-industrial level and will reach 2.7°C by end of century.

All this has led to increased frequency, intensity and duration of heat waves which refers to sudden rise in temperature of a region from normal average temperature.

Benefits of inclusion of 'heat wave' as a notified disaster under Disaster Management Act, 2005

- ① It will lead to formulation of national level guidelines by NDMA to handle heat waves.
- ② Better financing to mitigate disaster

from National and State Disaster Mitigation funds.

- ③ Help from NDRF and SDRF can be sought in a timely manner.
- ④ Will lead to better awareness generation among people about ~~the~~ threats posed by disaster.
- ⑤ Improve co-ordination and R&D towards understanding and mitigating disaster.

However, simple inclusion of disaster as 'notified' will not be enough. More steps are needed which include:

- (a) formulation of local level Heat Action Plans
- (b) Awareness Generation and Early warning systems
- (c) Investment in cooling systems

Thus, inclusion can be done but it should be followed by comprehensive action plan.

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)

Cyber security and threats of Cyber warfare have emerged as major security challenges in era of Industry 4.0.

In this context, Indian armed forces has formulated a joint doctrine of cyberspace operations to enhance India's cyber defense and offense capabilities.

It will lead to strengthening of Cyber security posture by $\Rightarrow$

- ① Enhancing co-ordinated response and action between armed forces and creating a centralised command.
- ② It focusses on improving the capacity building of armed forces in emerging cyber threats.

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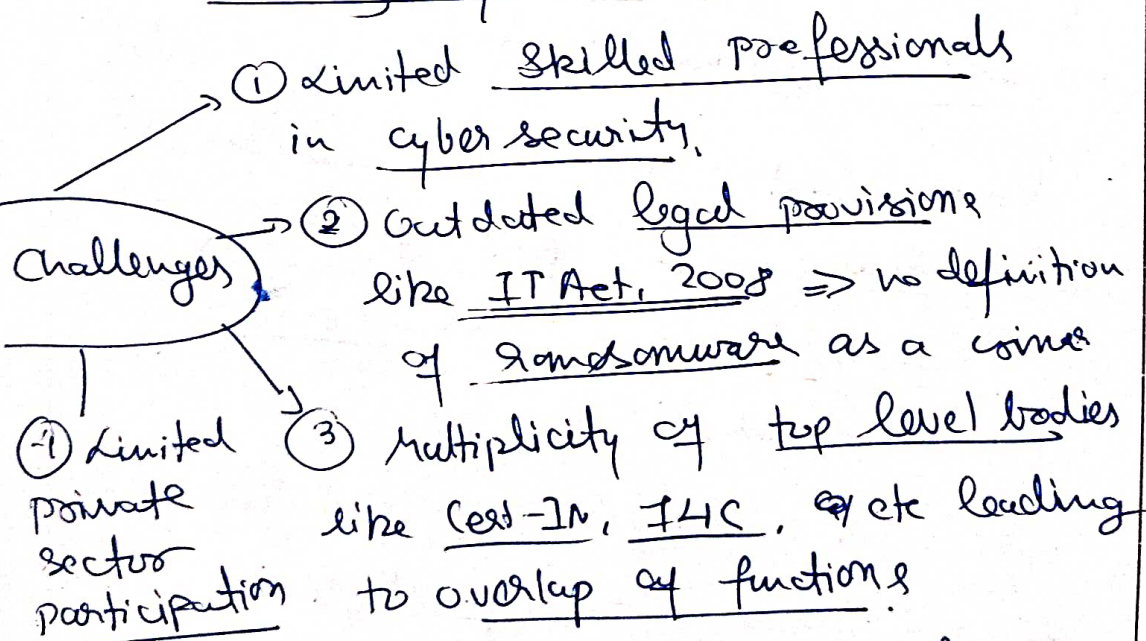
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③ It will lead to R&D in state of the art and latest generation cyber defense capabilities.

④ Help in creating deterrence against cyber warfare and terrorism by strengthening offensive capabilities.

⑤ Ensure the success of Digital India and Industry 4.0 in India.

However, numerous challenges exist in securing cyber space.



These challenges need to be overcome by a comprehensive review and re-organisation of cyber security in light of new challenges.

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)

The Central Government recently had extended BSF jurisdiction of BSF from 20km to 50km of international border ~~between~~ in states adjoining Pakistan and Bangladesh border.

Necessity of the extension of jurisdiction

- ① Rising number of threats emanating from border areas like drug trafficking human trafficking, etc.
- ② New threats also emerging from air domain, i.e. use of drones to smuggle arms and drugs across border.
- ③ Enhanced jurisdiction will improve BSF to plan its operations, enhance operational efficiency and tackle emerging challenges.

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- ④ It will lead to single point of command and improved co-ordination and reduce frequent conflicts with state police.

Potential issues in extending jurisdiction

- ① Federal Challenge: Law and order is state subject. Hence, extension of BSF jurisdiction for search and seizure is seen as encroachment on power of states.
- ② This may lead to overlapping jurisdiction between BSF and state police leading to confusion and conflict.
- ③ Overlap of jurisdiction $\Rightarrow$ makes it difficult to establish and fix accountability.
- ④ May also lead to duplication of effort and wastage of limited resources.

Thus, there are potential benefits and challenges. Efforts should be to co-ordinate with states and ensure BSF and police function in co-ordinated way to tackle emerging threats.

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

India has emerged as the 5th largest economy and will be 3rd largest by 2027 as per IMF.

India is targeting a \$30 trillion economy by 2047 to attain Viksit Bharat status.

However, India's economic growth has often been termed as jobless growth due to low employment elasticity of growth.

The unemployment rate as per PLFS is around 4.8% and as per Center for Monitoring Indian Economy, it is above 6.5%.

Thus, persistent unemployment is a major challenge for India.

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Analysis of Concept of Structural unemployment

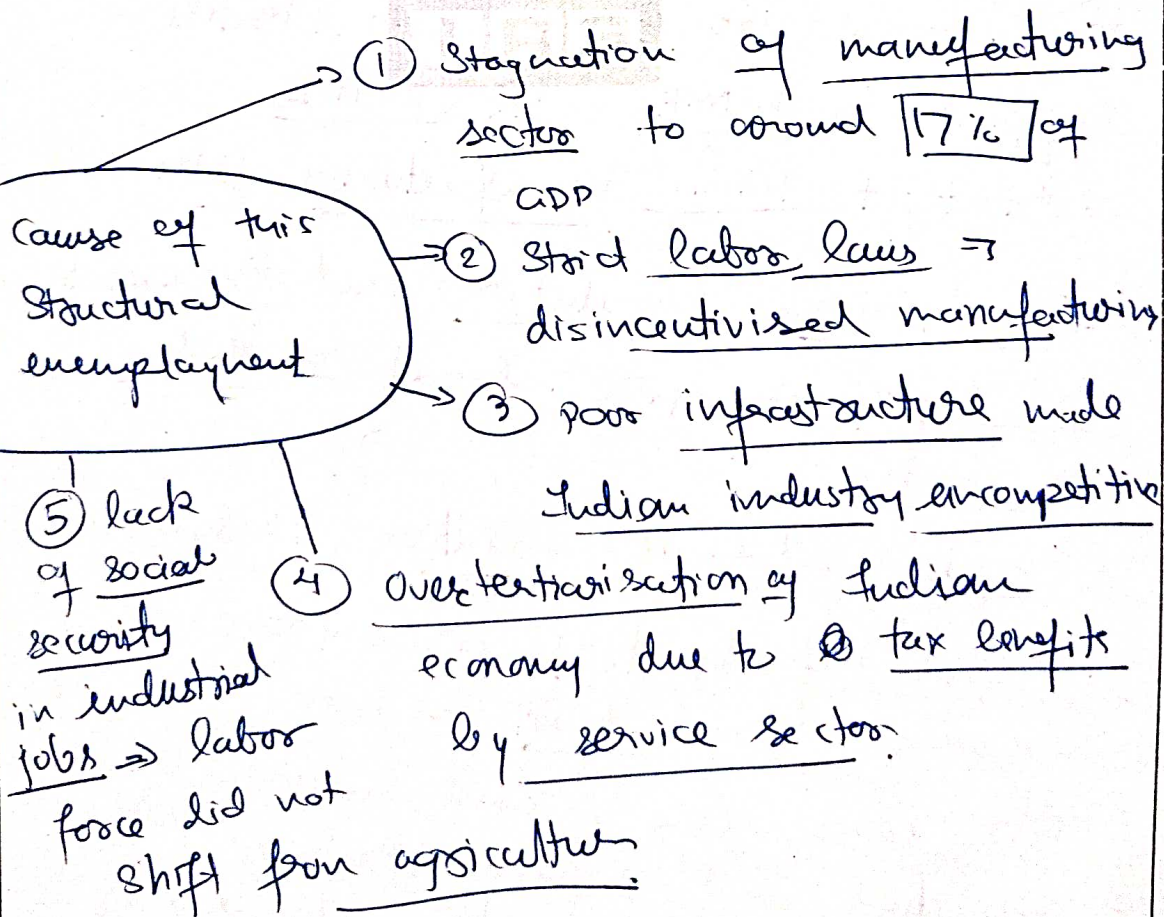
→ Structural unemployment happens due to change in structure of economy while transitioning from agriculture.

⇒ India's case

↳ Agriculture: 45% employment, 18% GDP

↳ Service: only 18% employment but 55% GDP.

This shows structural unemployment.



Relevance of concept of Structural unemployment

Structural unemployment is acting as a major hindrance towards India's aim of Make in India. Without job-creation in secondary sector, per-capita income will remain low and Viksit Bharat dream will be challenging.

Policy Measures for inclusive job growth

- ① Promotion of labour intensive sectors
 ↳ food processing sector, textile
- ② Support to MSMEs : ↳ MSMEs
 contribute to 110mn manufacturing jobs
- ③ Simplifying regulation and bureaucratic red tape ⇒ give boost to Make in India
- ④ Employment Linked Incentive (Budget-2023)
- ⑤ Rapid infrastructure ⇒ improve economic productivity ⇒ more jobs.

This way we can ensure job creation and ensure growth is sustainable and inclusive.

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)

Micro Small and Medium Enterprises

(MSMEs) play a critical role in GDP growth, exports, manufacturing output along with job creation.

Role of MSMEs in fostering regional growth

- ① Job-Creation: MSMEs located in tier-2, tier-3 and villages are key to providing jobs and enhancing income.
- ② Diversified geographical presence of MSMEs lead to balanced regional development.
- ③ Cluster of MSMEs around big industrial clusters like Sanehedpur, Coimbatore, etc leads to development of basic infrastructure.
- ④ Sustainable urbanisation: MSMEs in small towns leads to de-congestion of big cities leading to sustainable urbanisation.

- (5) MSMEs in various sectors like food processing, education sector, etc cater to local demand improving standard of living.
- (6) Exports: Many MSMEs are linked to global value chains leading to increased export earnings.
- (7) Skill development: MSMEs tie up with local ITIs to enhance skilling of local youth.

Ways in which MSMEs can contribute to industrial diversification and technological advancement →

- ① MSMEs are quick to set up and face light regulation allowing them to quickly diversify.
- ② Government policy of MSME procurement via [GEM] portal can enhance demand for their products.

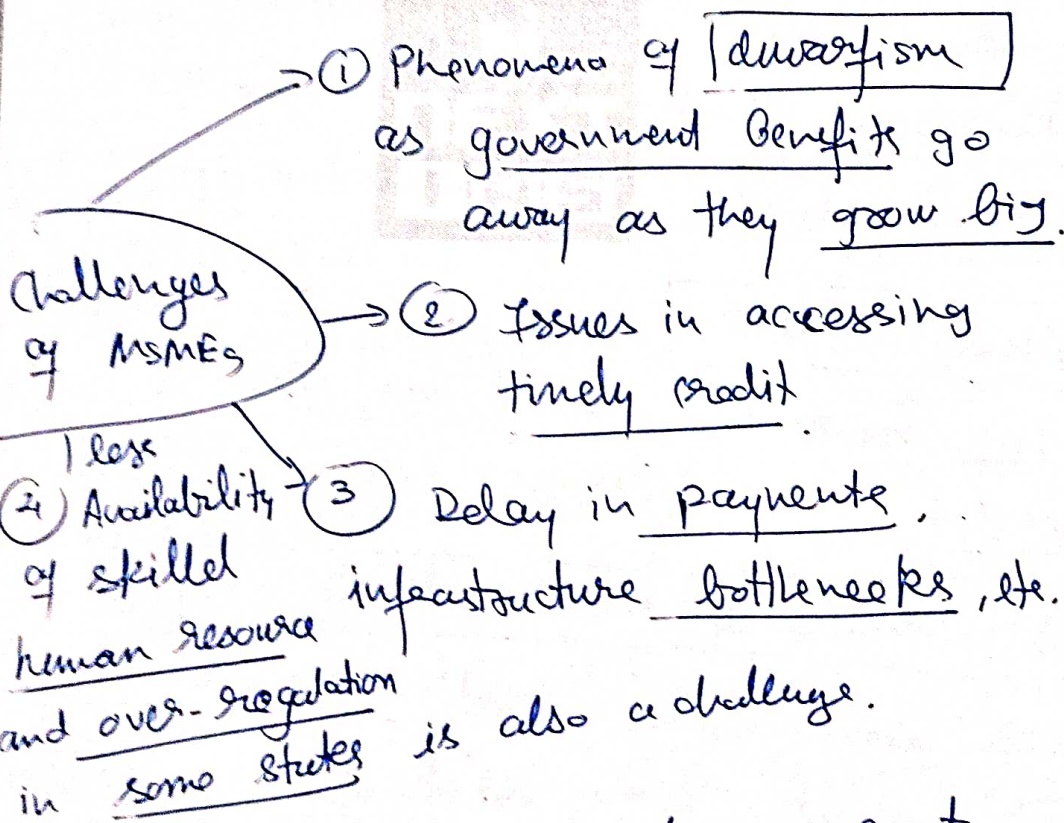
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③ MSMEs in manufacturing can avail Priority Sector Lending of banks to invest in latest technologies lead to technological advancement.

④ MSMEs can improve the overall supply chain efficiency by investing in technologies like Blockchain, AI, etc.



In conclusion, MSMEs have great potential but we need reforms to enhance ease of Doing Business for MSMEs.

13. "MSP का एकमात्र उद्देश्य किसानों को आकर्षिक मूल्य प्रदान के आधार से बचना है"। क्या आपको लगता है कि MSP को वैधानिक बनाने से किसानों को आकर्षिक आधारों से बचना 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?

Minimum Support Price (MSP) (15 marks, 250 words)

is a price guaranteed for procurement on 23 crops announced by government to ensure remunerative prices to farmers.

It is aimed at ensuring that farmers remain insulated from sudden price shocks and also support food security via Public Distribution System.

Legalisation of MSP

→ MSP legalisation has its own sets of benefits and challenges.

⊕# Benefits of MSP legalisation

① It will ensure compulsory procurement

☞ currently, procurement benefits of MSP only to 6% farmers that

too for rice and wheat and not well developed for other crops.

- (2) May promote crop diversification as crops like millet, pulses will also be guaranteed.
- (3) Ensure risk management for farmers as they will be assured procurement $\Rightarrow$ reduce rural poverty.

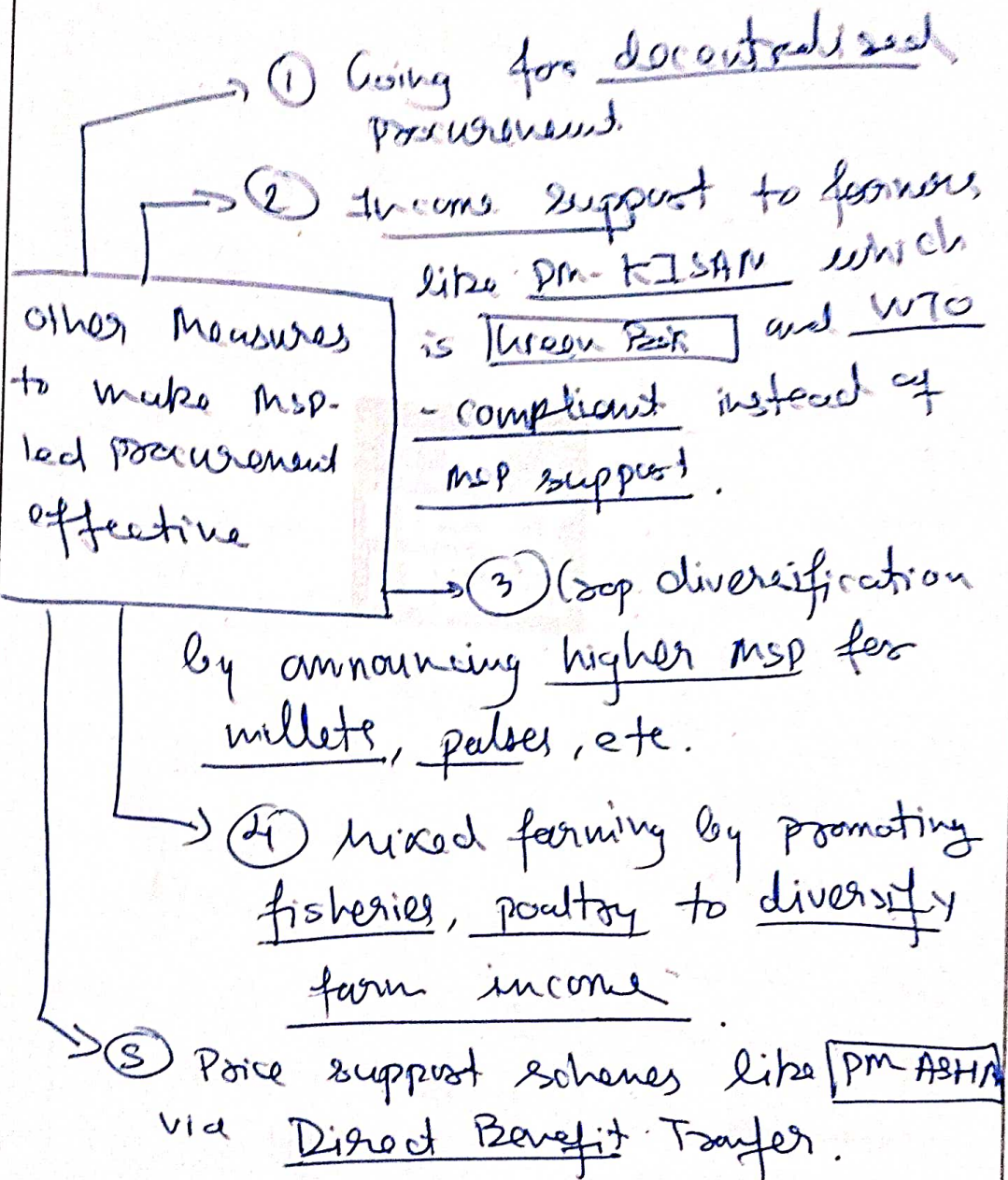
Issues in MSP Legislation

- (1) High fiscal burden: agri agricultural subsidy already are 12% of the budget.
- (2) Environment Sustainability as crops like wheat, rice are water guzzlers.
Punjab, Haryana classified as over-exploited on ground water - atlas.
- (3) Challenges at WTO as subsidy may exceed ambros-bod level agreed under Bali round.
- (4) often MSP benefits are cornered by large farmers but small and marginal farmers are 86% of total farmers.

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Thus, legislating MSP has numerous challenges. Hence, [alternatives] need to be considered.



Given the huge fiscal cost of MSP legalisation, the above alternatives can be the way forward.

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)

The Food Corporation of India (FCI)
is the main agency mandated under
the National Food Security Act (NFSA) 2013
to ensure food security in India.

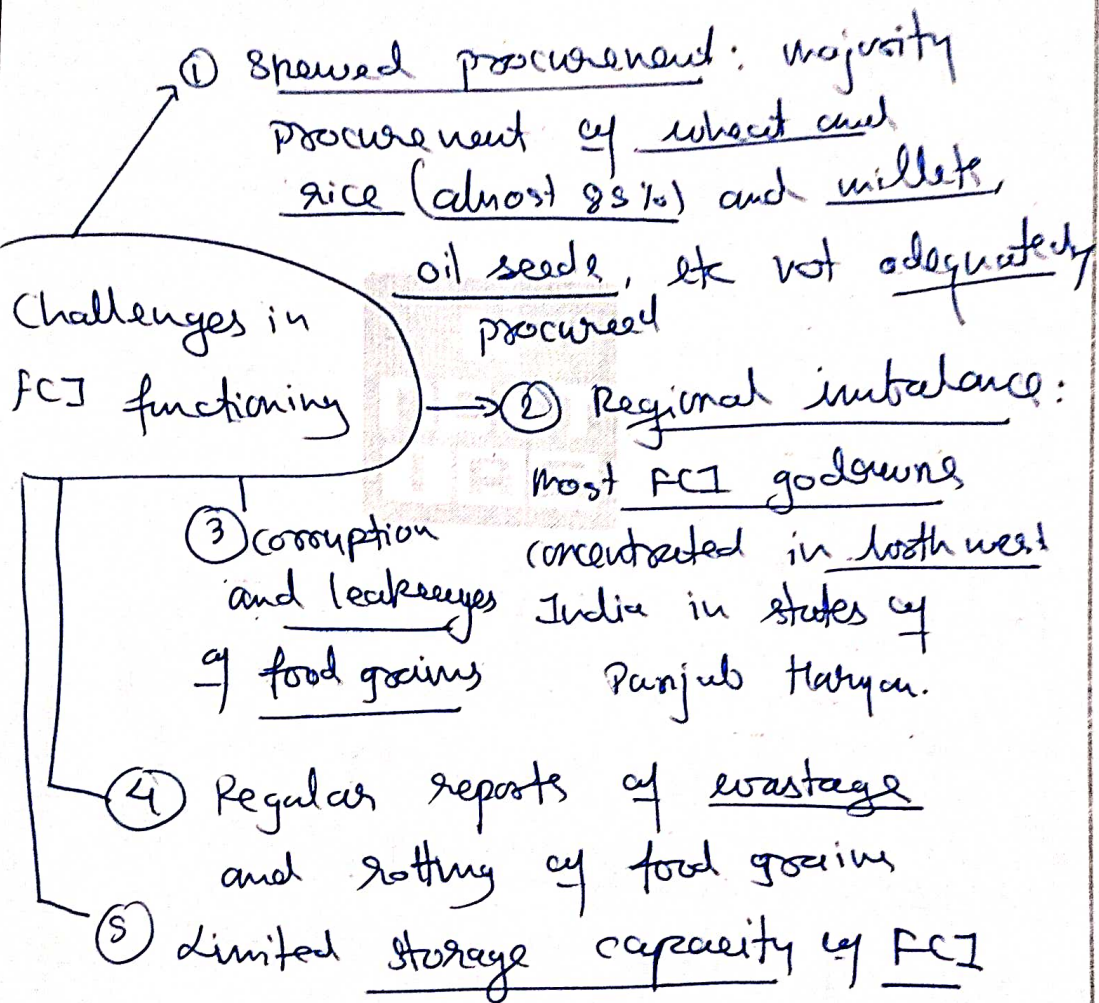
Role of FCI in Public Distribution System (PDS) to ensure food security

- ① Procurement: FCI is the nodal agency for procuring food grains from farmers at [MSP].
- ② Transportation and Storage: FCI is responsible for safe storage and transport of food grains in warehouses.
- ③ Supply to states: FCI supply food-grains to states at central issue price to be supplied to beneficiary via PDS.
- ④ Digitisation and Reforms: FCI

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undertake reforms like e-POS machines, identification of ration shops, one-ration one ration card to improve food delivery and ensure food security.



Reforms in FCI's functioning

- ① Diversification of foodgrains procurement to incentivise cultivation of pulses and millet.

- ③ Decentralise the procurement by procuring from local farmers and supplying to local farmers $\rightarrow$ improves efficiency and reduce cost.
- ④ Integration of technology like Blockchain, AI to enhance supply chain management.
- ⑤ Digitisation of supply chain to reduce corruption and leakages.
- ⑥ Involvement of private sector in creating warehouses and cold storage capacity.
- ⑦ Rationalise expenditure to reduce the overall food subsidy burden.
- ⑧ Ensure not just food security but also focus on nutritional security.

Reform and Revitalisation

of FCI remains crucial to deal with challenge of hunger and poverty and achieve SDG1 (No poverty) and SDG2 (No hunger).

15. भारत में कृषि उत्पादकता और खाद्य सुरक्षा बढ़ाने में नैनो प्रौद्योगिकी की भूमिका पर चर्चा कीजिए। नैनो-उत्प्रेरकों 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 science and engineering of materials at the nanoscale i.e. 1 to 100 nanometers.

Role of Nano-technology in enhancing agricultural productivity and food security

- ① Optimising input : nanotechnology can enhance the input efficiency

↳ this reduces cost
↳ prevents wastage

↳ Nano every liquid by IFFCO

- ② Nano sensors can be used to monitor crop health and lead to precision farming.

- ③ Nanotechnology has applications in domain of food fortification to improve nutrition

- ↳ solve malnutritiona problem and
enhance nutritional security

Recent developments in nanotechnology,

- ① Nanotechnology is used to develop latest fertilisers and pesticides
 ↳ nano-liquid sprayer
- ② nanotechnology is used in targetted drug delivery. ↳ use of gold-nano particle to deliver cancer drug.
- ③ Nano-materials like quantum dots are being developed.
- ④ Materials like Graphene, Carbon-nanotube, etc have wide ranging applications

Potential benefits of ~~nano water~~ and fertiliser and pesticides

- ① Improve overall efficiency of input use and reduce wastage.
- ② Help in preventing soil degradation which was common due to

overuse of these inputs.

③ Help address environmental challenges like eutrophication.

④ Reduce the overall cost of input $\Rightarrow$ help improve farm income.

⑤ Enhance agriculture productivity by targetted input delivery.

⑥ Reduce overall subsidy burden of government ($\Rightarrow$ fertiliser subsidy is 80k crore)

① Initial cost of technology will be high $\Rightarrow$ may ~~ex~~ widen rich-poor farmer divide.

Potential Risks

② Risk of contamination of environment as environment damage not well understood.

③ Nano-particles may bio-accumulate in human food chain.

Thus, risks needs to be properly studied and addressed before widespread release of new technology.

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 are a type of semiconductors that work at the nanoscale. They represent the application of nanotechnology in the electronics industry.

Various application of quantum dots

① Display technology: Quantum dots have wide ranging application in improving LED displays by enhancing color contrast and improve picture quality.

② Reduced power consumption: Quantum dots are capable of producing different lights but at the same time consume less power.

↳ they hold promise in reducing carbon footprint and tackling climate change.

③ Improving semiconductor chip design: Quantum dots can further enhance the speed and efficiency of Integrated Circuits (ICs) by promoting further miniaturisation.

④ It can help in improving the efficiency of solar panels by improving its energy conversion factor.

↳ this has potential to support global green energy transition and India's Panchsati of reaching 30% renewable energy by 2030.

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5) Enhancing battery storage : Quantum dots can reduce the issue of intermittency in renewable energy by enhancing battery storage efficiency and making it affordable.

Thus, quantum dots hold wide ranging applications across sectors.

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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)

The wildlife Protection Act, 1972 provides for establishment of protected areas in order to ensure bio-diversity conservation.

Currently, nearly 3.2% of India's land is covered by protected areas.

Role of protected areas in bio-diversity conservation

- ① Areas like National Park, wildlife-sanctuaries provide for exclusive undisturbed ~~buffer zones~~ core areas

↳ it helps in reducing outside interference for wildlife.

- ② Strict punishments have been ensured for hunting and poaching of wild animals as in various Schedules.

③ Many protected areas like Nilgiri Biosphere Reserve, Manas Reserve, etc provide protection to dense rainforest as well.

④ Scope of Eco-tourism: Tourism in protected areas enhances awareness about wildlife and increases sensitivity towards wildlife.

⑤ Buffer Areas in Biosphere Reserves aid in promoting botanical research which further enhances biodiversity protection.

Effectiveness of these measure in protecting biodiversity

Strengths and success

① Doubling of India's Tiger population: India doubled tiger population from 1550 in 2006 to more than 3100 tigers in 2022.

② India has taken up ambitious projects like international transfers

and re-introduction of Cheetas in some
National Parks.

③ Institutional mechanisms like National
Biodiversity Authority, MCA created.

→ ① Protected areas take exclusive
approach to conservation

→ ② often this has led to displacement
of indigenous people, tribes
and deprived them of
traditional rights.

Challenges
faced

④ Man-
animal
conflict risky

→ Maddharis relocated
from Gir, Gujarat.

③ Inadequate monitoring ⇒
poaching incidents continue

→ elephant entering habitable
regions in Wayanad,
Kerala.

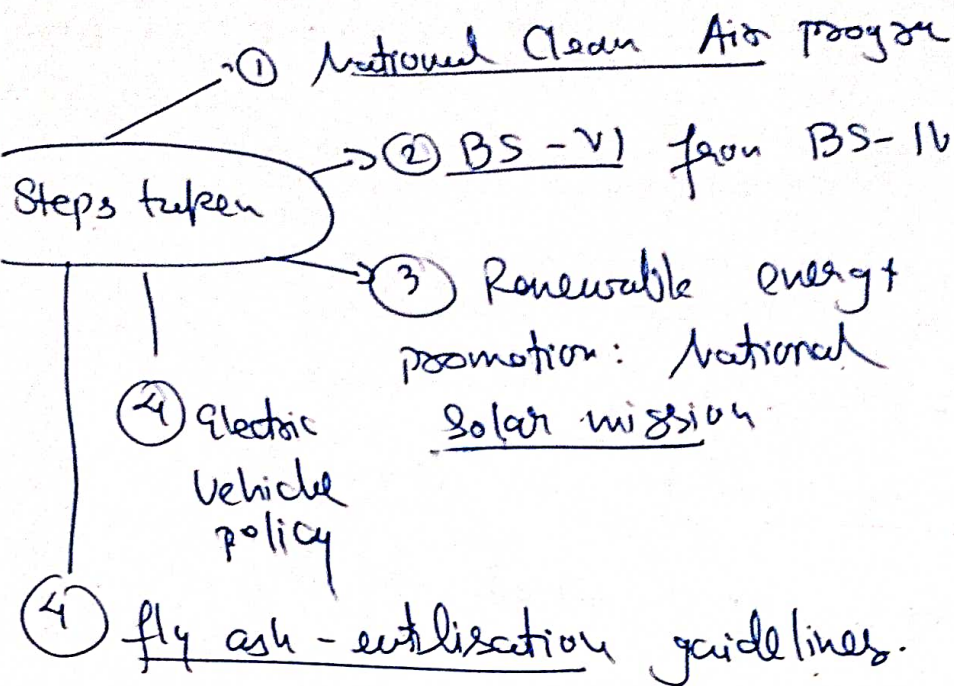
Thus, results have been mixed. Further
strengthening enforcement and involvement of
locals is needed in biodiversity management.

18. भारत में पार्टिकुलेट मैटर (PM_{2.5} and PM₁₀) 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_{2.5} and PM₁₀) 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)

Causes of high levels of PM_{2.5} and PM₁₀

- ① Vehicular pollution in urban centers
- ② Thermal power plants burning coal and biomass
- ③ Limited adoption of technologies like catalytic converters to reduce pollutants.
- ④ Limited public transport ⇒ leads to over-reliance on private fleet.
- ⑤ Energy mix of India : mostly 107% of energy from agris fossil fuels.
- ⑥ Stubble burning in agriculture.

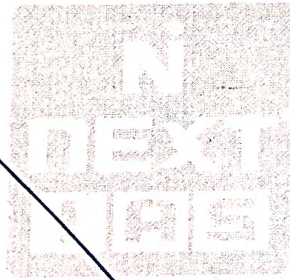


Effectiveness of these measures

Numerous Challenges are faced by India. These are as follows:

- (a) limited monitoring infrastructure for pollution.
- (b) limited financial support to implement programs like National Clean Air Program.
- (c) multitude of sources of air pollution makes it difficult to control.
- (d) limited adoption of Electric vehicles due to poor charging infrastructure.

Thus, while steps have been taken, there success remains limited. A comprehensive action plan with collaboration between state, center and local bodies along with NGOs and private sector is the need of the hour.



19. अंतर्राष्ट्रीय नारकोटिक्स नियंत्रण बोर्ड (INCB) रिपोर्ट 2023 दक्षिण एशिया में नारक 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 आयामी का विश्लेषण कीजिए। साथ ही, इससे निपटने के लिए बहु-आयामी दृष्टिकोण भी सुझाएं।
(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 central location of India as a source and a destination for drug trafficking between Golden Crescent and Golden Triangle creates numerous challenges for India.

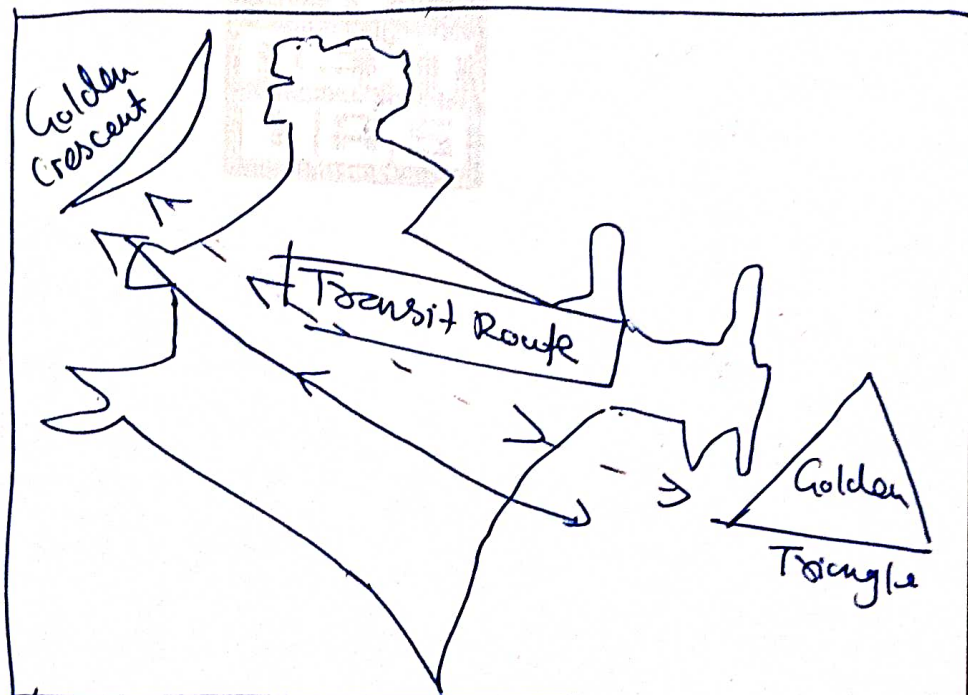
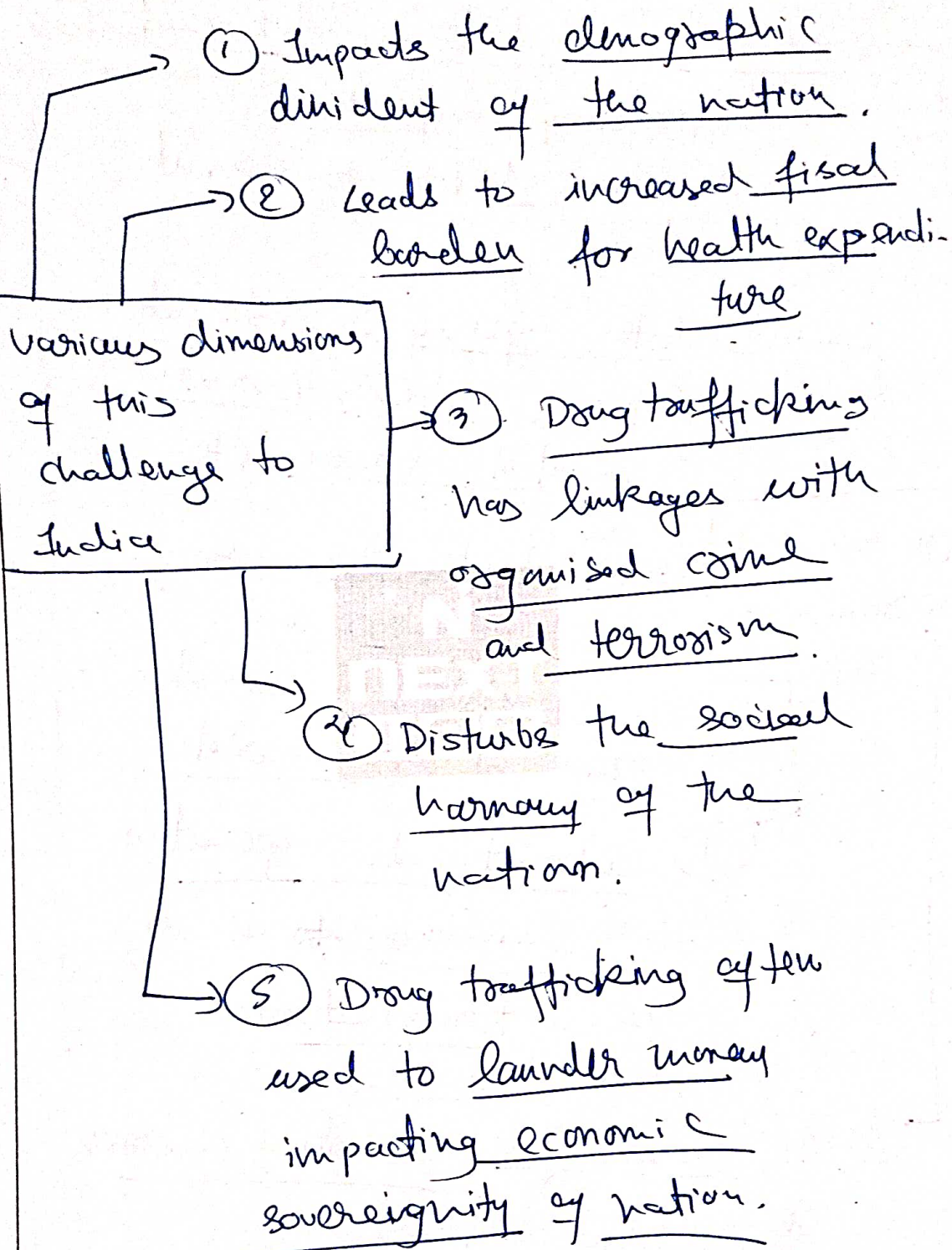


Fig: India as transit route of drugs



- Multi pronged approach
- ① Legal: strict law enforcement and correcting loopholes in acts like NPDS to prevent misuse.
 - ② Inter-agency co-ordination between police, Narcotics Control Bureau, etc.
 - ③ Technology: using latest technology and infrastructure to catch hold of drug cartels
 - ④ International co-operation with neighbours as it is a transnational crime
 - ⑤ At social level, spreading awareness de-addiction camps, etc.

Thus, a multipronged approach involving all stakeholders can help manage drug menace.

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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/उपायों (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 (Naxalism) aims to overthrow the democratic elected state by violent upsurge.

↳ At present, nearly 45 districts are impacted by LWE.

→ ① Poor Governance and corruption leading to alienation of masses.

→ ② large scale displacement particularly of tribals due to development projects like dams.

Root Cause
of LWE

↳ ③ Depriving tribals of their traditional forest rights and poor implementation of FRA, 2006.

→ ④ Poor implementation of ST and GT Schedule of Constitution.

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India's response to Maoism
needs to be multipronged

Hard security measures to deal with extremists:

① Strengthening of local police with modern weapons.

▷ Scheme for modernisation of Police force.

② Special CRPF battalions

▷ COBRA battalion

③ Specialised doctrines ▷ SAMADHAN doctrine

Socio-economic policies to handle root cause

① Surrender - cum rehabilitation policy

② Aspirational Districts

Program to develop most

backward districts.

- ③ Ensuring generation of employment and livelihood.

1991 TRIFED for marketing of
minor forest produce.

- ④ Empowerment of Gram Sabhas
under PESA, 1996

Thus, a multipronged approach
involving both security and
development aspects is need of
the hour.