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NEXT IAS

GS MAINS ADVANCED COURSE 2024

(To be filled by candidate)

TEST CODE : GSMAC2403 **Test No. : 03**

Name of Candidate: AAKASH. Mobile No. [redacted]

Roll No. : NIS2024 67986 Start Time 2:00 pm End Time 5:00 pm

Date of Examination: 25-07-24. 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: .....

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Student Concerns / Query	Evaluator's Feedback / Response
1	1 .....
2	2 .....
3	3 .....

MARKING SCHEME *

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.

IMPORTANT QR CODES

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

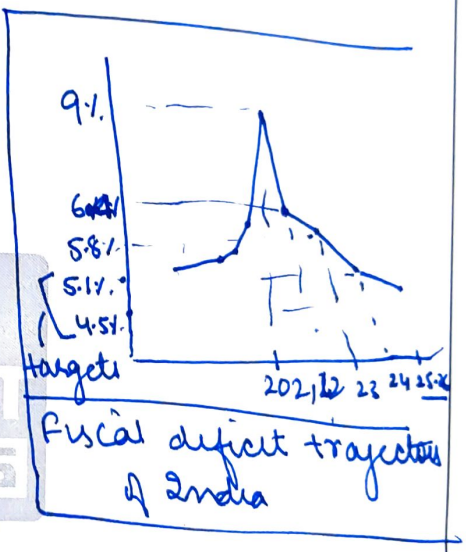
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1. भारत में उच्च राजकोषीय घाटे में योगदान देने वाले कारकों पर प्रकाश डालते हुए, ऐसे घाटे के संभावित परिणामों पर चर्चा कीजिए तथा राजकोषीय समेकन (Fiscal consolidation) सुनिश्चित करने के उपाय सुझाइए। (10 अंक, 150 शब्द)
Highlighting the factors contributing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

Recent Budget showed fiscal deficit of India to be at 5.8% of GDP which is significantly higher than FRBM Act target of 3%.

Factors Contributing

(i) Covid Pandemic
demand was low
supply chain disruptions
↓
government schemes
↓
raised fiscal deficit



Fiscal deficit trajectory of India

(ii) Populist Policies by the government
(eg) Farm loan waivers to large farmers also

(iii) Poor FRBM Implementation •
Fiscal discipline not maintained

(iv) High defence expenditure, rising capital expenditures (3.3 times in last 9 years)

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Consequences

(i) crowding out of private sector
(ii) decrease further borrowing capacity of government → Raise interest rates
(iii) future increase in taxes to finance fiscal deficit (Ricardo - Barro Hypothesis)
(iv) May have to borrow from foreign ↓ decrease strategic autonomy.



Impact of fiscal deficit on future Taxes

Measures to tackle

(i) Enhancing Revenue sources
(eg) GST collection, Tax discipline.
(ii) Streamlining tax collection, digitisation
(iii) Avoiding populist policies.
(iv) Restricting expenditures; debt/GDP below FRBM. council targets -

NK Singh committee recommended debt/GDP to be less than 60%, that can be made the target of fiscal policy.

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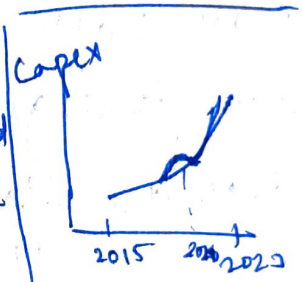
2. 2047 तक भारत के विकसित राष्ट्र बनने की आकांक्षा महत्वपूर्ण पूँजीगत निवेश पर निर्भर है। इसके आलोक में, इस लक्ष्य को प्राप्त करने में पूँजीगत निवेश की संभावनाओं पर चर्चा कीजिए। इस संदर्भ में भारत के समक्ष क्या चुनौतियाँ हैं?

(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's capital expenditure has increased by 3.3 times since 2015. Even in Recent year budget there is a rise of 1.1% in capital expenditure (10 lac Cr → 11.1 lac Cr).

Potential of capital Investment → Developed India



Rise in capital expenditure

(i) Infrastructure development → economic growth

World Bank - 1% investment in Infra lead to 1% GDP growth rate.

(ii) Inclusive growth - GDP per capita will increase

(eg) human capital investment - Skill India mission

(iii) Better social indicators

education infra: School, colleges

health infra: hospitals, PHCs

(iv) Women empowerment (eg) Women skilling, education

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(v) Tech advancements - with more investment
↓
rise in productivity.

(vi) Green Growth challenges

(i) Capital investment still very less than revenue expenditure

(ii) Private capex very low
eg only 20% of total.

(iii) Difficult energy transition to green energy. eg impact on farmers

(iv) Job less growth especially with tech advancements

(v) Tax/GDP very low = 11.5% (lowest among G20 countries)

(vi) Investment in populist policies, high primary deficit, high off budget borrowing → impact capex

Therefore, there is a need of Fiscal prudence, better tax collection, inclusive policies especially on human capital development and green growth

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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)

India's urban population has reached 35% and is expected to cross 50% by 2040

Peri urban agriculture - is the form of agriculture practiced in and around urban areas

garden farming | vertical farming | bio farming | Organic farming

Opportunities

(i) Efficient utilisation of spaces in urban areas

(ii) less space → more productivity

(iii) Good market linkages because of developed roads and transport

(iv) Organic inputs easily available → more demand of organic products in market

(v) Environmentally sustainable

eg avoid heat island formation

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(vii) Can protect from rising heat waves

(viii) Good for food processing Industries

(ix) Highly nutritious and fresh food and fruits to urban population

Challenges

(i) Rural agricultural chain may be impacted → more competition

(ii) Huge Traffic in cities may lead to wastage of food

(iii) Lack of spaces in peri urban areas

(iv) Connectivity lines not yet well developed.

(v) Expensive initial investment

(vi) May increase cost of food in urban areas.

Therefore, there is need of appropriate linkages and robust logistics for both rural and peri urban farm produce,

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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 is the largest producer and consumer of pulses but import 9% of its Pulses demand

India imports 60% of its vegetable oil demand (largest importer)

Challenges in Pulses

(i) More dependence on 1 pulse only
(eg) Channa - growth - >50% of all pulses

(ii) Wheat and rice preference under MSP policy

(iii) Wastage of pulses while transport
(eg) 10% of pulses are wasted in transport and storages.

(iv) Lack of Behavioural change among farmers to grow pulses

(v) Poor quality seeds - Poor productivity

Challenges for veg oils

(i) Long Gestation period - for crops therefore farmers are reluctant

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(ii) Inadequate government support
(eg) not much procurement under MSP.

(iii) High initial capital investment

Measures to address challenges

(i) Diversifying the crop production
- Diversifying MSP procurement
- Farmer's Behavioural change

(iv) Schemes like NMEOP (National Mission for Edible oil-Oil Palm) to be promoted

(iii) Initial incentives and insurance to farmers growing oil crops

(iv) Better quality seeds, irrigation facilities to be provided.

Indonesia, Malaysia for veg oils and Brazil for Pulses can act as a role model for India to become self sufficient in these areas

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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 is the use of microorganisms for production of various consumer or capital goods

eg Biopharma Industry

novel drugs can be made

Biofoundry

Potential

(i) India's pharma market is 3rd largest

Biopharma market growing at 10% CAGR per year

(ii) Sustainable green economy by building green energy

eg Biodiesel — uses micro algae.

(iii) Biofuel production (transport, electricity generation)

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(iv) Achieve Panchamrita goals (achieving 500 GW of non-fossil energy).

(v) Decreasing import dependence for energy (eg India - 80% import dependent).

Challenges

(i) Need huge capital investment.

(ii) Huge competition from china and western markets

(iii) Huge R&D infrastructure required with skill development.

(iv) Ethical issues - chances of zoonotic pandemics (eg - Wuhan - covid virus leaks can occur)

(v) long term potential side effects - unknown

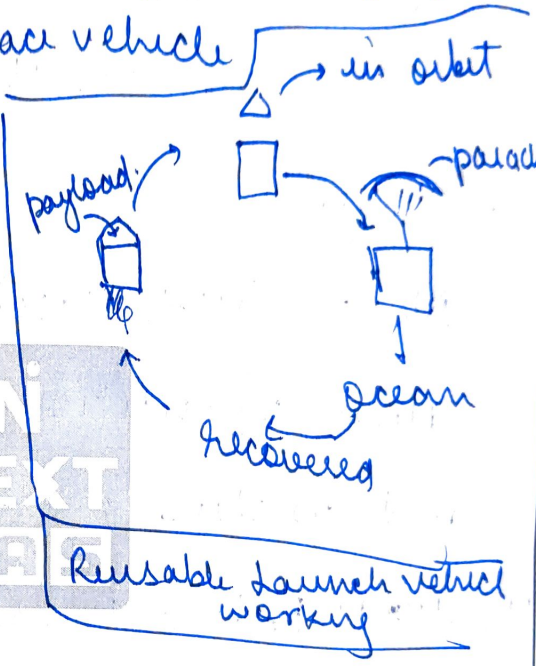
There is a need of knowledge diplomacy, enhancing Research and Development, and skill development to progress in these fields

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6. पुन: प्रयोज्य प्रक्षेपण यान (RLV) की कार्यप्रणाली के पीछे क्या सिद्धांत हैं? भारत के अंतरिक्ष वाणिज्य में आर.एल.वी. के उपयोग के महत्त्व 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)

India recently tested 1st phase of Reusable launch vehicle successfully in suborbital space vehicle



Principle

(i) Launch vehicle if recovered successfully can be refuelled and use for next rocket launch

(ii) RLV is expensive to build but with subsequent operations, it decreases the cost of launches

Significance

(i) Will be among the few countries to have RLV (Only USA, Russia China have it)

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(ii) significant of Indian space technology and ISRO's progress at global level

(iii) It will help develop India's future space missions

Potential Benefits

(i) Decrease cost of subsequent space flights

(ii) Decrease time and manpower for future operation

(iii) Private sector boost - as RLV can be used by private companies also

(iv) Launch satellites for other countries → increase in profits

(v) Can help in making India's space station

Therefore, RLV can be a path breaking technology boost for India, and in progress towards Viksit Bharat.

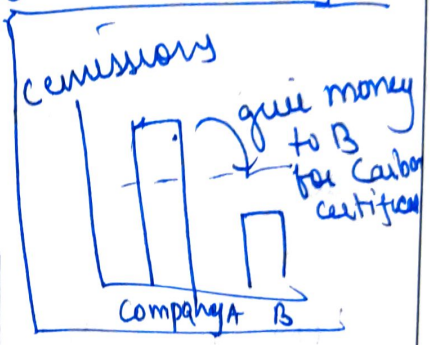
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7. कार्बन क्रेडिट ट्रेडिंग स्कीम (CCTS) 2023 की प्रमुख विशेषताओं का परिक्षण कीजिए। भारत में हरित गृह गैस (Greenhouse gas) उत्सर्जन को कम करने की इसकी संभावनाओं का विश्लेषण कीजिए। (10 अंक, 150 शब्द)
Examine the key features of the Carbon Credit Trading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

Carbon Credit Trading Scheme (CCTS) was recently launched in the Budget (2023) for enhancing green growth.

Key features

(i) CCTS will be applicable to all the companies



(ii) companies exceeding their targets of Carbon emission will have to buy emission certificates from the companies with lesser emissions

Potential for mitigating GHG emissions

(i) Promote environmental discipline within companies.

(ii) Greener companies can make

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profits via leading

(iii) More investments in the companies with greener growth.

(iv) Promotion of green technologies like catalytic reductors by companies to tackle pollution

Challenges

(i) Shallow ecology concept rather than deep ecology

(ii) Instances of greenwashing.

(iii) Some companies like Coal India can suffer immense losses due to their innate nature.

(iv) Regulations for CCTS are still to be formed.

Overall, Mission LiFE must be promoted, all companies must become green as much as possible to achieve SDG Goal #.

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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)

Heat waves are phenomenon when temperature rose ≥ 40°C on plains and ≥ 35°C on hilly areas.
or there is rise of 4-5°C in a short span of time

Recently, there has been a rise in incidences and duration of heat waves

Time to include it as notified disaster

(i) Huge death toll - that occurs with every heat wave can prevent
eg Heat stroke

(ii) More fund allocation can be possible

(iii) Action plan for mitigation will be developed
eg Building green spaces

(iv) Increase preparedness levels
eg Boosting up healthcare infrastru

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(v) Help financially, recovery and rehabilitation of affected people.

(vi) Enhance awareness and government support.

challenges → Now not the time

(i) Wide ranging impact across space disasters generally occur at one large area.

(ii) Drought already included under the disasters

(iii) No role of NDRF Force present in heat waves.

Despite these, seeing the benefits and changing climate, it should be added under disaster so that adequate action can be taken up.

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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)

India faced 3rd largest number of cyberattacks in world - NCRB in 2021.

Therefore, 'joint doctrine for cyberspace operations' is developed.

Benefits

(i) Internal security boost - against 5th generation warfares i.e' cyberwarfares

(ii) Remove adhocism

(iii) will also help in conventional threats like piracy, border infiltration etc
Intelligence gathering

(iv) Better Border management

(v) Protecting critical infrastructure of country (eg) Kundakulam power plant

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(vi) Enhance accountability of cyber authorities of NCIIPS (Nat critical infrastructure Protection system)

(vii) Enhance Surveillance system of the army

Challenges

(i) Predictability of actions may increase → increasing the threat

(ii) Enhancing technologies with the cyber terrorists → linked with organised crime for funds

(iii) Coordination between various authorities lacking

Way Forward

(i) Proper knowledge sharing with all three branches of army

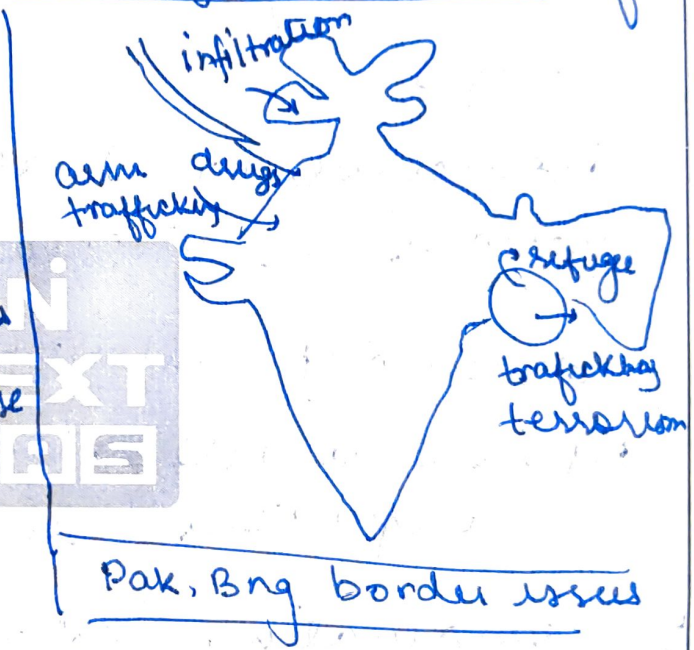
(ii) Enhance R&D. defence expenditure iDEX can play a huge role in developing Indian cyberwarfare capability

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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)

BSF patrols and works in the area of Pakistan and Bangladesh borders to protect from any terrorist influx or violence



Necessity

(i) Growing threats

(a) Recent increase in terrorism incidences in Jammu

Reasi incident

(ii) Threat of two front war with Pak and Bangladesh.

(iii) Tackle problem of trafficking across the borders

(iv) Help in border development at the region

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(v) Intelligence gathering and security surveillance of the region.

(vi) Highly porous borders - needs a dedicated force.

Challenges

(i) Difficult terrain. eg Tunnel difficult to neutralise

(ii) Problems with State police - tussle over jurisdiction.

(iii) BSF soldiers Mostly from outside area → cultural conflicts

(iv) Fiscal burden - for deployment huge manpower needed

(v) Better technologies and more independence to BSF needed.

BSF can play a huge role in Border security of India especially with Pakistan's rise of extremism and for safety of citizens after A 370 revocation

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11. भारत की आर्थिक विकास की कहानी प्राय: 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)

India has grown at an average growth rate of 8% since LPG reforms in 1991 but its growth is consistently alleged to be jobless growth

eg Unemployment levels (PLFS-2023) = 3.2% (UE)

Structural UE

It is a type of UE that occurs due to skill mismatch between the available skills of labour to the demanded skills in the market

eg As per India Skills Report - 47% of Indian graduates are unemployable because of poor skills

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Relevance in context of India's current economic situation

(i) Maintaining economic growth - will require consistent labour inflow with demanded skills (eg) AI skills in service sector

(ii) Harnessing Demographic Dividend going to be highest for next 37 yrs.

(iii) Disguised Unemployment in Agriculture sector - (eg) 47% employment → only 17% GDP contribution of Agriculture

(iv) Challenge of FDI outflow due to emergence of AI → western countries may pull back FDI from service sector

(v) Low skilled - manufacturing jobs not well developed - infrastructure and industries (eg) employment in manufacture stuck at 25% since 1991

(vi) Migration of skilled labour in search of better paying jobs can affect Indian economy

(vii) Poor Industry academia linkages

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Policy measures to promote inclusive growth

(i) Skilling of Youth (eg) Pradhan Mantri Kaushal Vikas Yojana, Skill India Mission

(ii) Boosting manufacturing sector growth (eg) PLI scheme, SFURTI scheme for MSME.

(iii) Training in newer technologies (eg) future skills Prime for AI development

(iv) Promotion of Industry academia linkage (eg) New Education Policy 2020 coding skills from 6th class itself.

(v) Inclusion of women in employment field (eg) via SHGs, monetisation of care works.

(vi) Transition to green economy needs more skilling and specific to environment targets (eg) LiFE Mission.

To reap the demographic dividend and becoming developed by 2047, India must adopt an inclusive, tech-oriented and efficient approach

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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 वे 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 are playing a huge role in India's economy especially in the manufacturing sector.

- 48% exports
- 40% employment
- 31% of country's GDP

Role of MSME: Regional Growth

(i). Economic development of the region where MSMEs are present

- employment to youth
- skills to people
- investments by household increase

→ prosperity ↑, productivity ↑

(ii) Development of infrastructure (eg roads, railways, social infrastructure) along with MSMEs.

(iii) District as export hubs causes

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the global image and even tourism opportunities

(iv) balanced growth - to all the regions of country leading to less inequalities and regionalism

Challenges
- Concentration in few states (eg Maharashtra)
- poor branding of products
- high logistic costs from regional areas (eg logistic cost = 14% (ES))
- poor access to credit support in far off areas
- lack of linkages with the export hubs and big cities

MSME : contribution : Industrial Diversification

(i) Variety of products and Innovation (eg Digital products with AI innovation)

(ii) Promotion of entrepreneurship → risk

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taking behaviours → more innovation.

(iii) Access to capital - (eg) Startup India scheme - Venture capitalists can invest in the ideas.

MSMEs : technological advancements

(i) Research and Development - Investment can be done by MSMEs.

(ii) Newer ideas by entrepreneurs according to market demand.

(iii) Help of other government initiatives
(eg) Atal innovation Mission

(iv) Collaborating with foreign companies and universities

MSMEs can act as the lifline for India's inclusive and sustainable economic growth. For this initiatives like ASPIRE, Mudra loans must be increased

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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 - declared by Cabinet Committee on Economic Affairs. is aimed at providing a minimum cost to the farmers for their crops to defend against market volatility.

Right now, MSP is not legal therefore government is not bound to purchase whole produce

Legalisation of MSP — insure farmers

(i) Against Price volatility in the market farmers will be insured

(ii) Crop Diversification - i.e shift from Rice and wheat to other crops like pulses and oilseeds can occur

(iii) Against disaster/ weath - farmer

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will be protected

(iv) From vicious cycle of poverty and rising debt traps (eg) >50% of the farmers have debt → 30% ⇒ non institutional

(v) can create a vicious cycle - as input cost for next cropping season will be available to farmers.

However, it may face various challenges

(i) fiscal burden - (eg) Report = 17 lac Cr will be required for procurement by government.

(ii) WTO issues of agricultural subsidies

(iii) Market reluctance - traders may not buy the produce (eg) seen in Maharashtra when minimum price legalised

(iv) Inflationary - may increase consumer burden of food commodities

(v) Inadequate storage facilities with government

(eg) - FCI - only having 47% of required space

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Other Measures which can be taken

(i) Price Deficiency Schemes - (eg) Bhavantar Bharpayee yojana in Madhya Pradesh to support farmers

(ii) Diversification of procurement along with decentralisation

(eg) in Punjab - millets also procured.

(iii) PDS decentralisation and procurement of additional food items

(eg) Thangua Ladoo in Uttarakhand

(iv) Model contract farming act to be implemented.

(v) More access of MSP to the small and Marginal farmers (Removal of middlemen)

(eg) promotion of e-NAM and Agmarket

Agriculture is the backbone of any society and farmers must be supported at any cost with initiatives like Ryuthu Bandhu Yojana

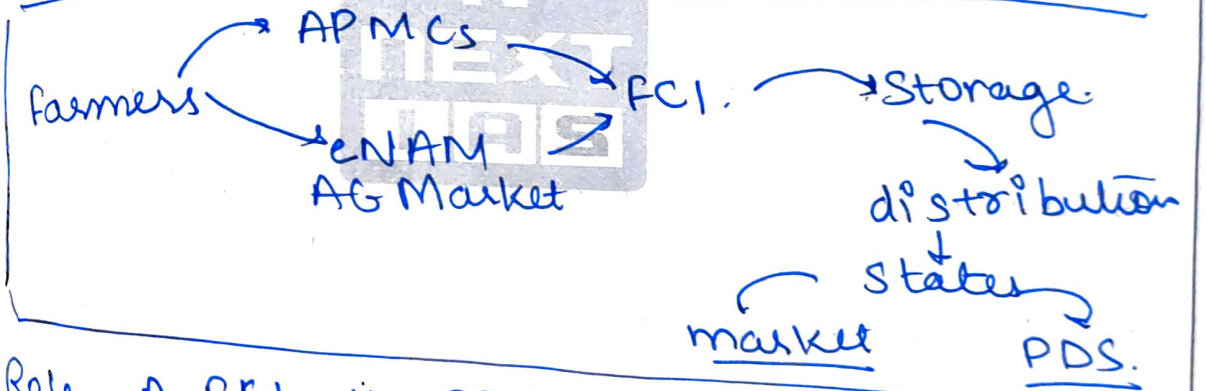
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14. भारत में खाद्य सुरक्षा सुनिश्चित करने के लिए सार्वजनिक वितरण प्रणाली (PDS) में भारतीय खाद्य निगम (FCI) की भूमिका पर चर्चा कीजिए। भारतीय खाद्य निगम की दक्षता और प्रभावशीलता को बढ़ाने के लिए इसकी कार्यप्रणाली में आवश्यक सुधारों को सुझाइए। (15 अंक, 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 is a statutory body formed under FCI Act with mandate of procuring the grains/produce from farmers at MSP and distributing to states at issue price for their PDS system



Role of FCI in PDS

(i) Procurement of produce - at MSP prescribed by CCEA via eNAM or APMCs.

(ii) Storage in Godowns - cold storages with adequate technology and monitory (eg) thermostats present.

(iii) Developing new cold storages

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(eg) Private Entrepreneurship Guarantee scheme — New warehouses in PPP model

(iv) Decentralised procurement at multiple regional levels

(v) Distribution to States at central issue price which is less than MSP

(vi) Maintaining Buffer stocks for price stabilisation.

Challenges → huge wastages (eg) 10% of food wasted in 2023 in storage

(i) - Inadequate storages (eg) only 47% of the demanded

(ii) First in first out system followed poor quality of grains in market

(iii) Unmechanised cold storages
(eg) 80% of cold storage

(iv) Regional imbalances in warehouses
(eg) mostly concentrated in Southern States

(v) Mass procurement of Rice and wheat
→ environmental imbalance
→ nutritional deficiencies via PDS
→ farmer's dependence

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Necessary Reforms in FCI functioning

(i) Public Private partnerships - to enhance infrastructure of cold storages

(ii) Building cold chain infrastructure i.e from transport (refrigerated), cold storages

(iii) Following Silo-bag technique instead of covered and plinth technique

(iv) Diversifying the procurement of producers (eg millets and pulses too -

(v). Early emptying of Buffer stocks to the market therefore decreasing wastage.

FCI can play a huge role in maintaining food security as well as doubling farmer income (Ashok Dalwai committee). Government must ensure that the fulcrum (FCI) works smoothly

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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 is an emerging branch where nanoparticles (size: 1-100 nm) are used, having different physical and chemical properties, into various fields

Nanotech: Agricultural productivity and food security

(i) Targetted inputs - eg use of Biofertilisers to enhance the crop yields
eg 8% high yield with nano urea

(ii) Environment sustainability - Soil productivity maintained
eg Nano urea efficiency = 80%
(conventional = 30-50%)

(iii) Better yields → of crops ensuring food security.

(iv) less human side effects of pesticide

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as very minuscule amounts are used.

(v) Better Monitoring (eg use of nano-sensors in soil for soil monitoring.

Recent Developments → Nano urea by IFFCO can be used by farmers
→ Nano pesticides have come up
→ Nano sensors.

Potential Benefits of Nano fertilisers and Nano pesticides

(i) Better penetration to the roots of the crops

(ii) less leaching to the groundwater (GW) less GW pollution

(iii) Lesser Air pollution as needed in less amounts.

(iv) Increase farmer's income by decreasing input costs and enhancing yields

(v) Decrease Subsidy Burden of

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government on fertilisers

(iv) Soil Health maintained → less crop replenishment time needed → more means

Risks of use

(i) Bioaccumulation and magnification of nanoparticles in flora and fauna
↓
Diseases like ADHD, Autism reported

(ii) Used only at later stages of plant growth i.e to stem and leaves
↓
farmers need a behavioural nudge.

(iii) Damage to marine/riverine life due to nanoparticle consumption.

(iv) Lack of awareness among farmers
↓
increase divide → among large and small farmers.

(v) Can change the pollination patterns of fauna (eg monarch Butterfly

Nanotech is the future, it must be harnessed but with proper risk and benefit analysis.

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16. 2023 का भौतिकी का नोबेल पुरस्कार क्वांटम डॉट्स के संश्लेषण की खोज के लिए एकिमोव, रुस और ब्रावेंडी 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 or Q-Dots works on the principle of Quantum technologies

Quantum entanglement
↓
if two particles are entangled then if the state of 1st is known, other will be opposite to that

Quantum Superposition
↓
two quantum particle exist in particle and wave form at the same time

Quantum Teleportation


↓
if 1 and 2 are entangled and 3 and 4 are entangled
↓
if brought near and 2 and 3 gets entangled. 1 and 4 will also got entangled

Entire technology works on Qubits which can exist as both 0 and 1

Q-dots have specific advantage over earlier technologies

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Applications

(i) Television screens - in place of OLEDs and mLED

Q-Dots - more brighter long lasting.

(ii) Encrypted communication between two parties present at far away places + via encryption and decryption keys



(iii) Use in tackling Cyber threats

Q-dots can be faster than earlier technologies.

(iv) Emersive experiences - eg use in XR, VR and AR for better resolution

(v) Military use - for communication and surveillance purposes

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(vi) ~~Making~~ Disaster Management - through better communication in case of connectivity breakdown.

(vii). Check Money Laundering activities
- using quantum dots in detecting the proceeds of money
(viii) Use along with Blockchain tech

challenges
- technology Still at nascent
- potential of misuse in high
  - eg organised crime activities
- Economic cyber threats may increase

Way Forward
(i) International collaboration and knowledge Sharing.
(ii) Enhancing R&D infrastructure

Quantum tech hold the potential to revolutionise how we communicate more Research is required in this field eg National Quantum Mission, QuEST.

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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)

Under Environment Protection Act, WPA and National Biodiversity Act, some places are declared protected areas for better conservation of biodiversity

eg Wildlife Protection act → National parks, wildlife sanctuaries, Biosphere Reserves (UNESCO Man and Biosphere program)

Role of Protected Areas

(i) Protect from environment degrading infrastructure eg polluting industries

(ii) Sustainable tourism by people without degrading / hampering the biodiversity.

(iii) Reducing Man-animal conflicts by separating both and giving better spaces to fauna

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(iv) Giving homely habitat to animals (natural) along with good nutritious food

(v) Some of the local rights are identified. (eg) collection of produce

(vi) Some activities like Safari is allowed → Tourism.

Challenges → Damage by of flora by the tourists

→ Animals habitat disturbed with human interactions

→ local rights restricted

Effectiveness in preserving India's Biodiversity

Positives

(i) Increase in number of animals

(eg) Tigers in Gir National park
500 (1972) → 2900 (2023)
(Tiger census)

(ii) Better monitoring of animal health and movement
(eg) use of MSTRIPES.

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(iii) Import of new species
(eg) African cheetah's in Kuno National park.

(iv) Highly successful One Horned Rhino programme in Assam

However some challenges are there in efficacy

(i) Many species are being neglected
(eg) Elephant – no statutory backing to their protection

(ii) Increasing Man-Animal conflicts

(iii) Death of imported cheetah's due to foreign habitats.

(iv) Huge bureaucratisation of work → delayed actions.

Biodiversity forms a huge part of country's soft power, maintain ecological balance and also provide economical and cultural Benefits therefore to achieve target of Kunming Montreal Protocol, BD must be protected well

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18. भारत में पार्टिकुलेट मैटर (PM2.5 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?

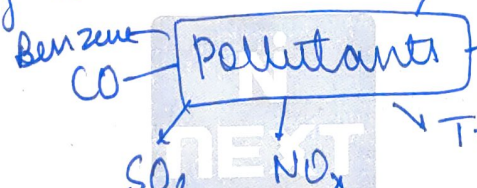
(15 अंक, 250 शब्द)

What the causes of high levels of particulate matter (PM2.5 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)

According to World IQ Air Report 10 out of 15 most polluted cities in World are present in India

The example can be Delhi Pollution every winter, Mumbai pollution



Causes of high PM 2.5 and PM 10 pollution

(i) Vehicular pollution - releases unburnt particles into the atmosphere.

(ii) Stubble burning - from wheat ~~and~~ crops leading to increase PM 2.5 and 10

(iii) Burning of municipal waste

(iv) Unchecked emission from the industries and construction activities

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(v) Cracker burning - especially in the festival seasons.

Causes of Ozone Pollution

Tropospheric ~~oxygen~~ Ozone → NO_x + CO + Volatile Organic compounds + sunlight

(i) Industrial effluents
↳ ~~SO~~ Carbon Monoxide and VOC release

(ii) Vehicular pollution = NO_x release

Some Natural factors - Dust storms from areas of Middle east also come at the time of Oct-November

Government steps taken
- Electrical vehicle policy
- ~~CAQM~~ guidelines
- New technology
  - Happy seeder, biodecomp
- GRAP protocol
- Cracker ban
- BS IV → BS VI shift compulsory
- Thermal power plant emission guidelines
- Green infrastructure development

Effectiveness

(i) Stubble burning has decreased to

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50%. especially in Haryana

(iii) BS IV to BS VI have been successful

(iii) e-Buses in Delhi - for public transport

(iv) Water sprinklers, Anti smog guns smog towers, air purifier applied

(v) Awareness increased

Challenges

(i) Reactive > proactive approach.

(ii) Multiplicity of authorities
   (eg) CPCB, CAQM, state government.

(iii) Threshold stubble burning to cause delhi pollution still occuring

(iv) forest coverage still low

(v) Inter state collaborations poor. (Blame game)

(vi) EV infrastructure (eg) charging stations not developed yet.

2mi deaths occured in India in 2019 by air pollution, therefore DPSIR model must be applied - China model - sponge cities and Nitin Shah committee recommendation of Blue green infrastructure can be followed

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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)

Drug trafficking - is a major challenge to India according to INCB and Narcotic Control Bureau of India (NCB)

NCB - Punjab is the most affected state with Drug trafficking



Drug trafficking in India

Challenge Dimensions

(i) Geographical challenge presence between golden crescent and golden triangle

(ii) Vast Maritime Boundaries leading to challenge of smuggling.

(iii) Porous Borders — eg with Bangladesh and Myanmar — less control

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(iv) Instability in Neighbourhood
eg Myanmar - difficult to control trafficking without collaboration

(v) Use of Advanced technology
eg Drones used across Indo-Pak border for drug smuggling

(vi) Organised crime links with drug smuggling

(vii) Lapses in the intelligence gathering and action delays.

Impact on India
(i) Youth → unproductive → unemployment
↓
Rise in crime rates

(ii) increase health care burden of India

(iii) Difficult for law and order authorities to tackle.

(iv) Development of organised crime chains.

Multipronged approach to address it

(i) Border Security - must be increased with technology advancement
eg CBIMS - Comprehensive Border Infra Management System

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(ii) Anti Narcotic Authorities to be strengthened
↓
Breaking the nexus / chains of supplies

(iii) International collaboration with other countries and platforms
eg UNODC

(iv) Tech advancement - to detect the drugs and its supply chain

(v) Strict punishments for peddlers and Rehabilitation for the victims
↓
more Rehab centres.

Punjab Model, where Recently authorities acted actively to catch the drug abusers and peddlers, made more Rehab centres and strengthened Border checks to counter drug trafficking and abuse can be adopted.

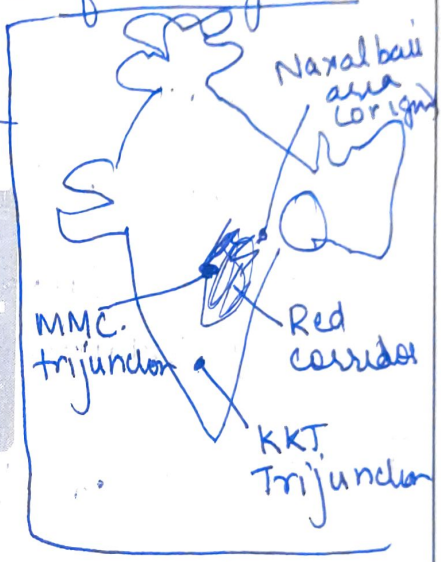
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20. वामपंथी उग्रवाद के प्रति भारत की प्रतिक्रिया (कारवाई) में नक्सलवाद के मूल कारणों को दूर करने के लिए कठोर सुरक्षा उपायों के साथ-साथ सामाजिक-आर्थिक नीतियों और संवाद जैसे नरम दृष्टिकोणों/उपागमों (Soft approaches) को एकीकृत करने की आवश्यकता है। चर्चा 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 (LWE) or Naxalism works on radical ideas with aim to overthrow the government violently and set up a united federal government



Root causes of Naxalism

(i) Underdevelopment of some areas ↓ regionalism

(ii) Misgovernance
eg in land rehabilitation measures
↓
alienation and resentment

(iii) Tribal recruitment by Radical elements for personal gains.

(iv) Foreign support - eg China believed to be supplying weapons to Naxalites

(v) Poor literacy and awareness
easy to manipulate populations

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(M1) Connectivity lacking ← lack of development
Naxalites destroy them

lack of awareness about government policies

India's response - two pronged

Soft approach — hard security measures

Soft approach

(1) Socioeconomic policies

(i) Better education opportunities
(eg) Eklavya model Residential Schools

(ii) Health care improvement
Arogya mandir developed - Ayushman Bharat Scheme

(iii) Connectivity projects
communication lines — roads

(iv) Adequate Rehabilitation of tribals rights to locals
(eg) Forest Right Act, PESA provided

(2) Dialogue with population and Naxalites

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(i) Negotiations are done to solve the problem (eg) Negotiation with Charu Mazumdar.

(3) Hard Security Measures

(i) Formation of security forces

(eg) Greyhounds - West Bengal, C-60 (Maharashtra)

(ii) Missions to destroy the violent naxalites (eg) Of Greyhounds

(iii) Increasing manpower to high risk areas

(iv) Technology enhancement (eg) IED detectors

Challenges: Though Naxalite areas have decreased but incidents like IED attack on police forces in Chattisgarh - still present.

SAMADHAN Strategy can be adopted

S - Smart measures.
A - Actionable intelligence
M - Motivated security
A - Alert forces.
D - Dashboard based KPAs and KPIs.
H - Harness technology
A - Action specified for each theatre
N - No access to finance

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