Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

NEXT IAS

GS MAINS ADVANCED COURSE 2024

(To be filled by candidate)

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

Name of Candidate: RISHABH SHARMA Mobile No. [redacted]

Roll No. : GSMACT24A1108 Start Time 2:00 End Time.....

Date of Examination: 15/09/2024 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

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

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

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

India has a high fiscal deficit of around ~6.5% as per Budget 2024-25. Fiscal consolidation in times of robust economy is the need of the hour.

Factors for high fiscal deficit

- Food subsidy for 67% of population
  - ↳ 2.05 lac crore
- fertilizer subsidy
- High borrowing by government
  - ↳ ~80% debt-to-GDP ratio
- Price-based mechanisms instead of investments
- Low participation of private sector in investment.
  - Eg. Agriculture R&D
  - burden on State

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

Consequences

1. Decline of credit rating of Indian markets
2. FPI pullout can worsen situation
3. High interest for future loans
4. Unsustainable debt
5. Crowding out as low credit left for businesses.

Measures for fiscal consolidation

1. Rationalise subsidies
   - Economic survey suggested food subsidy for poorest 20%
2. Privatisation of loss making PSUs
3. Increase exports.

Fiscal consolidation is the recovery that an economy needs in healthy times

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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 aims to become 'Viksit Bharat' by 2047, and for this capital investment can act as the fuel.

Potential of Capital Investment

- Crowding-in effect
  - ↳ credit available for private sector
- Spill over benefits on other industries
  Eg. Agglomeration
- Capex by government can revive sick industries
- Lead to human resource development
  Eg. Better facilities like health, education

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

Challenges

1. Low capacity of government in financing capital investment
2. High fiscal deficit
3. short term vision for populism
4. skill gaps among labour
5. Lack of infrastructure

Measures to Tackle Challenges

- Budget 2024-25 focuses of capex, Public Private Partnership for capital investment.
- PM Gati-Shakti can help
- FDI
- China plus one approach (Economic survey)

Capital investment is the tonic that an economy needs to work efficiently & effectively.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

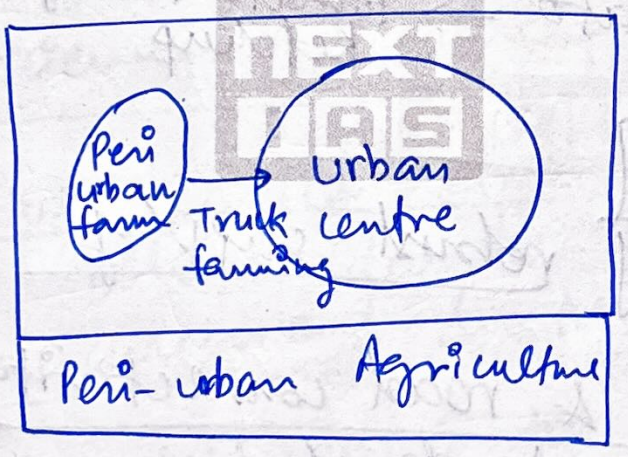
Candidates must not write on this margin

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)

Peri-urban agriculture is a type of agriculture done close to urban centres to meet the demands of fresh farm produce of urban populations.



Opportunities of Peri-Urban farming

1. High demands of urban populations
   Eg. Horticulture items, dairy products.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must no
write on this margi

② Demands for more remunerative agricultural items
Eg. organic produce.

③ No challenge of perishability as immediately transported

④ Export potential

⑤ Food processing industries can be located in nearby urban areas.
Eg. Tomato → Tomato Ketchup

Challenges

① Presence of robust supply chain

② Transport & road connectivity is sub-standard

③ Middlemen often make it less remunerative for farmers

④ cold-chain infrastructure

⑤ Low awareness in farmers

This can be crucial in India's goal of doubling farmer's income.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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 currently has high import dependency for pulses and oil-seeds which must be addressed to ensure food & nutritional security (Right to food).

challenges in achieving self-sufficiency in pulses

① Not as attractive as rice & wheat due to guaranteed procurement & MSP

② More susceptible to pest attacks due to protein.

③ Done in less fertile lands due to opportunity costs

challenges in achieving self sufficiency in oil seeds

① Low MSPs for oil seeds

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must n... write on this marg...

② Erratic rainfall due to el-niño la-niña cycle

③ less remunerative to farmers

④ High volatility in prices

Common challenges ⇒ Cobweb cycle

Measures

① Increase MSP for pulses & oilseeds & give granted procurement

② Integrated pest management

③ Oil-palm mission for oil seeds

④ Provide robust supply chain management

⑤ Extension services to farmers

These both are essential for India's food security & thus we now need an evergreen revolution

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

Bio-manufacturing & Bio-foundry are going to be game changers in India's journey towards a sustainable green economy.

Biomanufacturing Potential

① Boost to India's pharmaceutical industry & help in strengthening India as 'Pharmacy of the world'.

② Bio-fortification to produce better seeds & transform agriculture & nutrition.

③ Boost India's exports of various products in biological area.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must no
write on this margi

Bio-foundary Potential

① Strengthen India's position in international economy

② Will give a fresh impetus in Biological R&D sector

India's Bio-economy is growing at a high CAGR & is of $130 billion as of 2024.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

6. पुनः 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's aim to send humans to space through Gaganyan Mission is based on use of Reusable Launch Vehicle (RLV).

Principles behind working of RLV

1. The spacecraft is returned into earth's atmosphere after going into space
2. It is controlled through propulsion on re-entry & is not destroyed.
3. It lands back on earth after completing the mission
4. Does not undergo free fall

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Significance

1. Help in Gaganyan Mission of ISRO
2. Can bring back evidences from moon & other planets
3. R&D in space
4. Road to India's own space station

Potential Benefits in Space Commerce

1. create industry of space tourism in India.
2. Provide cheaper alternative for foreigner space tourists
3. More economically feasable space research.

Reusable launch vehicles can be India's rocket towards a developed space industry.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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) 2023 is a novel initiative by Ministry of Power to create a carbon market in India and mitigate GHG emissions.

Key features of CCTS, 2023

Government fixes cap

Ex. 1 ton cement = 5 ton CO_2 emissions

Company A

Emits less than the cap

↓

get carbon credits for saved units

sells carbon credits

Company B

Emits more than cap

↓

Buys to compensate for offset

⇒ This way it creates a carbon market among industries.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

⇒ India's response to EU's CBAM as our products will be environmental friendly.

⇒ control over-emmissions of GHGs

⇒ Incentivise clean technology

Potential for Mitigating GHG emissions in India

Strengths
- favours clean technology
- penalises heavy emittors
- Puts a cap on per unit GHG emission

challenges
- Difficult to decide the optimal cap ⇒ Eg. Kyoto Protocol failed
- Monitoring issues

CCTS is a step in the right direction and ensures people right against climate change

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

This year has seen unprecendented heat waves in regions like Kashmir. Churu, Rajasthan faced a severe heat wave with 50.5°C temperature.

Increased Intensity, frequency & Duration
- → Non-conventional areas being affected
- → High intensity due to el-niño
- → Long persisting heat waves & severe heat waves in Churu
- → Increased frequency in urban areas due to concretisation.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Benefits of Inclusion of Heat Waves in Disaster Management Act

1. Burden on state government reduces as NDRF is involved
2. More attention is given and priority offered
3. Increased awareness among people
4. Proactive measures & it comes under a plan.
5. Increased funds for mitigation & resilience infrastructure.

Possible Issues on Inclusion
- → Increased fiscal burden
- → Divided accountability & federal issues

Including Heat Waves in Disaster Management Act, 2005 will ensure Disaster Risk Reduction on lines of Sendai framework

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

As per the latest Periodic Labour force Survey (PLFS), India has 3.2% unemployment rate, but high youth unemployment which becomes a hurdle in India's growth story.

Persistent challenges due to unemployment
- → Low labour arbitrage & wages
- → High dependency
- → loss of demographic dividend

Structural unemployment

Structural unemployment is the type of unemployment

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

where labour don't get work due to structural issues in economy like low development of manufacturing sector, infrastructure, education, skills, health prospects etc

Relevance of structural unemployment in India

1. Essential to address it to reap demographic dividend
2. To reduce the percentage of dependent population
3. Increase the health, education & skills standards for better human resources

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

Policy measures of Inclusive Job Growth

1. Bhartiya Model of Inclusive development (Economic Survey 2024)
2. PM Kaushal Vikas Yojana for skilled labour
3. National Education Policy, 2020 for vocational education & foundational numeracy, literacy
4. PM Jan Aarogya Yojana & Digital Health Mission for a healthy workforce
5. Stand up India for women, SC, ST entrepreneurs
6. Persons with Disability Act for horizontal reservation of differently abled in jobs.

India has a vision of Sabka Saath, Sabka Vikas ensuring inclusive job growth

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

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 & Medium Enterprises (MSMEs) are responsible for employing 90% of labour force of manufacturing sector, thus fostering regional growth.

Role of MSMEs in regional growth

① Present in every nook & corner of the country

② Employ women, depressed classes, tribals etc.

③ Contribute to the GVDP & GSDP, thus adding to regional growth.

④ Serve the local demands of people, thus ensuring

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

supply.

⑤ Provide people access to credit and help in financial inclusion

MSMEs contributing to Industrial diversification

① Act as suppliers to large enterprises.

② Prominent role in textile industry as yarning firms are mostly MSMEs.

③ Provide small parts like bearings to automobile industry.

④ Farm equipment to the agricultural industry
Ex. sickle, spades

⑤ Provide processed primary input to large enterprises.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

MSMEs in contributing to technological advancements

1. Helps in augmenting the manual labour
2. Lets the large enterprises focus on specialised areas
3. Act as the lifeline to many industries

MSMEs have huge potential & their growth must not be stunted.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

Minimum Support Price (MSP) aims to protect the farmers from price shocks but legalisation of MSP can have both positive & negative implications.

Advantages of MSP Legalisation

1. Farmers saved from sudden price shocks
2. Insured income to farmers
3. No exploitation of farmers by middlemen & private firms
4. Lesser farmers suicides

Eg. ~11,000 suicides in 2022 (NCRB)

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must write on this

Disadvantages of MSP legalisation

1. Increased burden of on the fiscal exchequer
2. High common prices can cause inflation
3. Exacerbated monoculture & reduced crop diversification
   Ex. Over focus on wheat & Rice
4. Environmental concerns of more stubble burning, falling groundwater table, increasing salinity.
5. Unsustainable use of fertilizers & pesticides
6. Small farmers still at loss as they sell to big farmers locally.
   ↳ only 6% farmers benefitted from MSP

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

as per Shanta Kumar Committee.

Other measures to make MSP led procurement effective

1. Digitisation of land records (DILRMP) to ensure that farmer who sown gets benefits
2. cooperation & co-ordination with state government for procurement
3. Using state-of-the art storage infrastructure
   Ex. silos of metal instead of cover & plinth
4. Increase MSP for climate resilient crops like Millets
   ↳ less rice & wheat
   ↳ less procurement burden.

Instead of legalising MSP, we can focus on doubling farmer's income through modern measures (Dalwai Panel)

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

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)

Food Corporation of India (FCI) is the nodal agency in India to take care of people's right to food (Article -21)

Role of FCI in Public Distribution System (PDS)

1. Ensures food security in India.
2. Procures food grains from farmers
   Ex. Rice & Wheat at MSP.
3. Storage of grains
4. Bears the procurement incidental costs
5. Distribution of food grains through fair

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

price shops under the PDS.

(6) food grains given to poor 67% population at highly subsidised prices or free under PM GKAY.

Reforms in FCI's functioning

(1) Procurement must be decentralised to save the transport costs & time

(2) storage to be done at local warehouses.

(3) use modern storage facilities to save from rotting
Ex. Metal silos.

(4) Development of cold storages

(5) Distribution shall be made on the basis of e-RUPI

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates write on this

vouchers

⑥ Agristack can be integrated with PDS

⑦ Inclusion & errors must be minimised

⑧ Lean the organisation by outsourcing the procurement, storage & distribution to private & state entities

FCI must be reformed to meet the current standards.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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 sector and has applications in enhancing agricultural productivity & food security in India.

Nanotechnology Application in Agricultural Productivity

(1) Nanosensors can be used to monitor soil properties

(2) It can be used in micro-irrigation facilities for precision agriculture.

(3) Reduce the fertilizer cost & handling burden

Ex. Nano liquid urea (NUL) by IFFCO.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

④ Nanotechnology has applications in fortification of seeds.

Nanotechnology role in Food security

① It can enhance the food properties by adding nutrients through fortification

② Smart Packaging using nano-materials that change color when food rots

③ Reduce perishability of food grains

④ It can also be used in market intelligence as nano sensors used in devices.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

Recent Developments & Potential Benefits

1. Nano-urea liquid - Iffco
2. Nano-pesticides

these are applied in small quantity, are cheaper & easy to handle

Risks

1. can cause chemical residue on crops
2. may not pass sanitary & phytosanitary measures
3. may harm the environment if used unsustainably

India's aim of becoming a food superpower in the world can be catalysed by using nanotechnology

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must write on this s

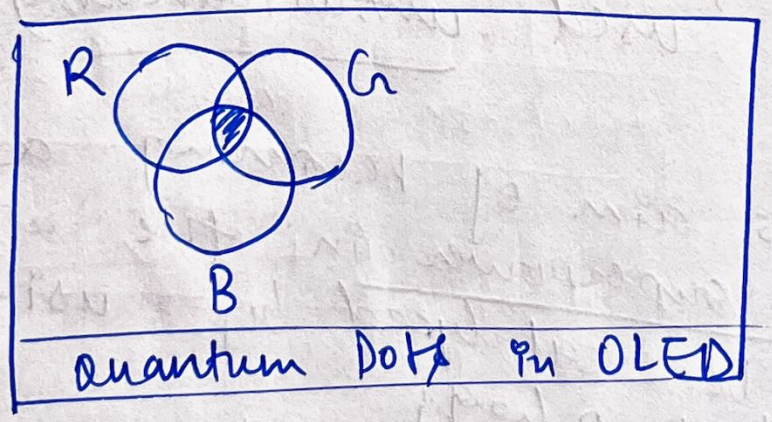
16. 2023 का भौतिकी का नोबेल पुरस्कार क्वांटम डॉट्स के संश्लेषण की खोज के लिए एकिमोव, रुस और बावेंडी को संयुक्त रूप से दिया गया। इस संदर्भ में क्वांटम डॉट्स के अनुप्रयोगों पर चर्चा कीजिए। (15 अंक, 250 शब्द)

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 scientific development in nano technology in which all three dimensions are of quantum scale. 2023's nobel prize in Physics was awarded for Quantum Dots.

Applications of Quantum Dots

① Used in OLED screens



Quantum Dots in OLED

② Have application in various electronic devices

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

③ Medical devices can be enhanced using quantum dots

④ can be used for creating nano-screens

It is a breakthrough discovery and has a potential to transform various industries.

NEXT IAS

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

In India, protected areas are governed by Wildlife Protection Act & Environment Protection Act which are for biodiversity conservation.

Types of Protected Areas in India

- National Parks
- Wildlife sanctuaries
- Biosphere Reserves
- Conservation Reserves
- community Reserves
- Reserved forests
- Protected forests

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

Role of Protected Areas

1. Help in conservation of flagship species.
   Ex. Tiger conservation through Tiger Reserves
2. Help in containing exploitation of wild plant species
3. counter illegal trade of wildlife items
   Ex. Rhino horns
4. Avoid poaching of threatened species
5. Protects from illegal lumbering of timber from forests
6. Help in research & tourism

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

Effectiveness

① National Parks - Have been successful due to highest level of protection

② Wildlife sanctuaries - success in overall protection of biodiversity.

③ Biosphere reserves - Aims to protected biodiversity along with traditional communities.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

Particulate matter refers to the suspended particles in atmosphere of size 2.5 or less μm (PM2.5) and 10 μm to 2.5 μm (PM 10).

ozone pollution means ground level ozone (O_3) in troposphere.

Causes of PM 2.5 & PM 10

- Vehicular emissions
- Emissions from factories & industries Ex. cement, coal, Power
- Volcanic eruptions

Causes of Ground level ozone Pollution

- automobile emissions Ex. IC engine

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

→ free radicals converting O_2 into O_3

→ infiltration of stratospheric ozone into troposphere.

Effects of PM & O_3 Pollution

① Deteriorates the health of people.

Ex. PM 2.5 can enter the bloodstream

Ex. Ozone can cause skin disease, lung disorders

② Make the atmosphere polluted & hinder visibility

③ PM can act as nuclie for aerosols → weaken monsoon

④ Ozone contributes to photochemical smog

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must n
write on this marg

Government steps to mitigate PM & O_3 Pollution

1. National Clean Air Program (NCAP) by Ministry of Environment
   - has increased awareness
   - monitoring
2. FAME - II subsidy for EVs
   - reduced percentage of fossil based vehicles
3. SAFAR by Ministry of Earth Sciences
   - measures the percentage of PM & O_3 in Delhi
4. Smog Towers
   - have helped but low density.

There is an urgent need to mitigate pollution on the lines of SDG - 13 of Climate Action

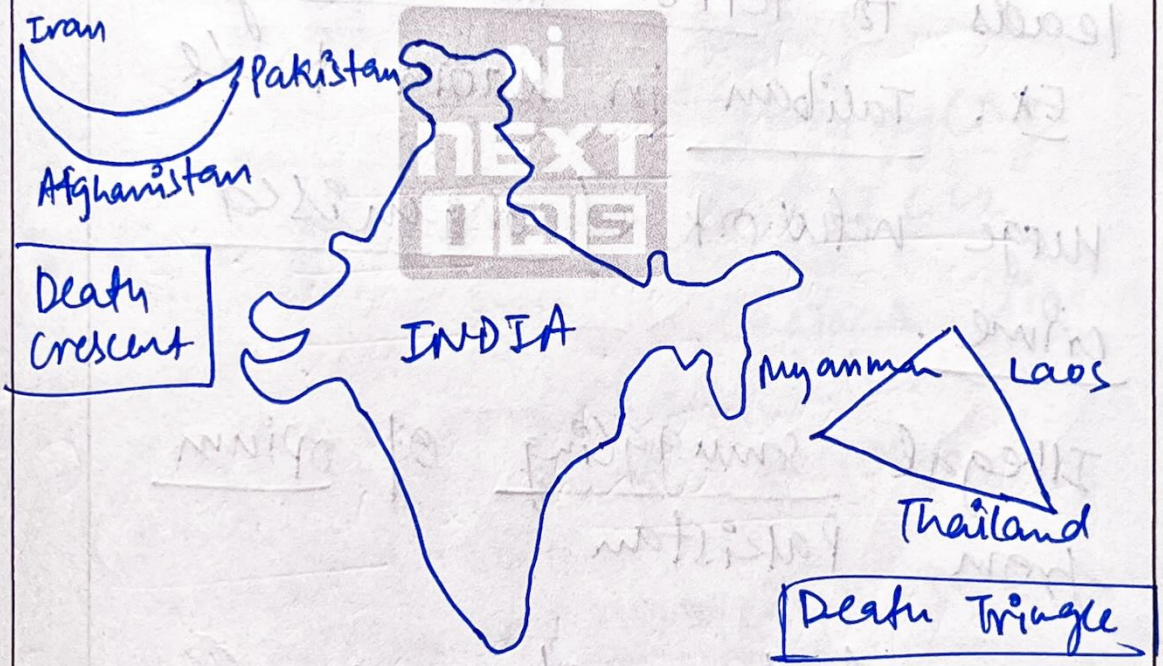
Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

India is sandwiched between the Death Crescent & the Death Triangle making it vulnerable to drug trafficking.



Drug Capitals of world

India
- → Source of Drugs
  - ↳ siphoned medical inputs
- → Destination of drugs
- → Transit Hub

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates mus
write on this ma

Thus, India becomes a major hub of drug trafficking as per International Narcotics Control Board (INCB) report.

Various Dimensions of Drug Trafficking Challenge

1. leads to terror financing
   Ex. Taliban in heroin trade
2. Huge network of organised crime.
3. Illegal smuggling of opium from Pakistan
4. Increased drug abuse among Indian youth
   Ex. Punjab
5. Loss to Indian economy due to increased health costs & lost taxes.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

Multi Pronged Approach

① Scrapping of free movement regime with Myanmar.

② Capacity building of security forces.
Ex. BSF along Indo-Pak borders

③ Multi-agency co-ordination to tackle the menace.

④ Curb maritime smuggling through patrols by ICG.

⑤ Technological solutions like CIBMS on Bangladesh borders to track border areas

⑥ Intelligence agencies shall be strengthened

Drugs trafficking is a multi-dimensional problem and it must not be allowed to mature beyond this stage.

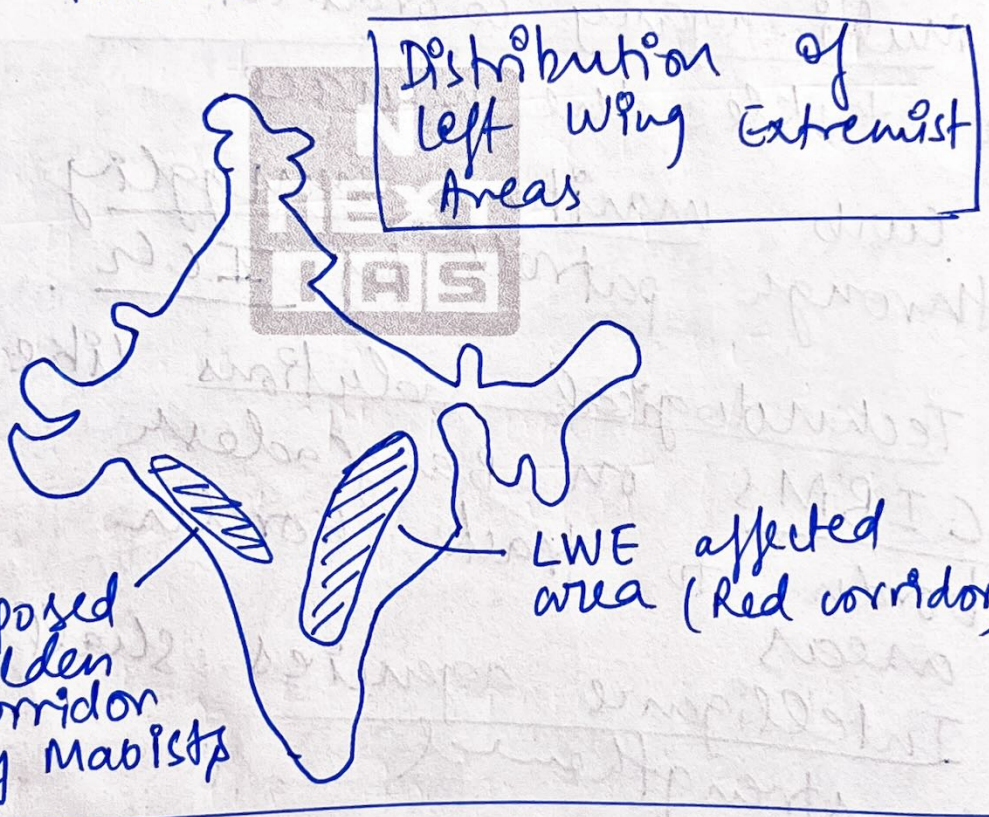
Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

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)

India is now adopting a 'Win Hearts & Minds' Approach to deal with Left Wing extremism and Naxalism.



Integrated Approach
- Hard security Measures (Hammer & Tongs)
- Soft Approaches (Win Hearts & Minds)

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

Characteristics of Soft Approach

① Filling the development & governance vacuum in left wing areas

② Engaging in dialouge with local communities to reignite their trust in democratic processes

③ Adopting a 'Clear-Hold-Develop' strategy for socio-economic development
Eg. successful in eradicating naxalism from Naxalbari

④ Opening schools, Hospitals

Integrated Approach addressing Root causes of Naxalism

① People grievances of neglect of state in development is addressed.

Next IAS ID: GSMACT24A1108, GSMAC2403, 17-09-2024 03:04 PM

Candidates must not write on this margin

② communities give up arms and participate in democracy
Ex. Dantewada

③ Provide local intelligence to security forces to eradicate radical naxals

④ Leads to humans resource development of tribals & other communities

⑤ Alongside, hard measures like Ban on CPI (Maoist) helps in countering terrorist acts

An integrated approach will lead India towards a naxalism free era.