

TEST CODE 7 1 3 2 3 8

MGP 2024

Time Allowed : Three Hours

समय : तीन घंटे

ForumIAS

Maximum Marks : 250

अधिकतम अंक : 250

GENERAL STUDIES / सामान्य अध्ययन

Name Of Candidate परीक्षार्थी का नाम	PREETI KUMARI		
Roll No./अनुक्रमांक	1910043839	Medium/माध्यम	English ☒ हिंदी ☐
Center Code/परीक्षा केंद्र	ONLINE	Date/दिनांक	12/09/2024

*Center Code : For Online - 1900 / Delhi : Karol bagh - 1901, ORN - 1902, Mukharji Nagar - 1903 / Patna : Boring Rd. - 2001 / Hyderabad : Jawahar Nagar - 2101

INDEX TABLE / अनुक्रमणिका			INSTRUCTION / अनुदेश	
Q. No. प्र.सं.	Max. Marks अधिकतम अंक	Marks Obtained प्राप्तांक	1. Please do furnish Name, Email, Roll No and Mobile in the answer sheet. कृपया उत्तर-पुस्तिका में नाम, ईमेल, रोल नंबर और मोबाइल नंबर भरें।	
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Total/कुल अंक	250		For Student Only / केवल परीक्षार्थी प्रयोग हेतु	
Examiner's Discretion/मूल्यांकन कर्ता का विवेक :			Start Time/प्रारंभ करने का समय : 5 pm	End Time/समाप्त करने का समय : 8 pm
Total Marks/कुल अंक :			Mode Of Examination/ परीक्षा की विधि :	Online/ऑनलाइन ☒ Offline/ऑफलाइन ☐
*Examiner's Discretion is the marks awarded at the discretion of the examiner based on your overall impression, on the basis of (but not limited to) your handwriting, presentation, use of diagrams, flowcharts, facts and figures or absolutely anything that he/she liked in your copy. मूल्यांकन कर्ता का विवेक अंक, आपकी लिखावट, प्रस्तुति, आरेखों के उपयोग, फ्लोचार्ट, तथ्यों और आंकड़ों या समग्र रूप किसी अन्य विषय वस्तु, जो मूल्यांकन कर्ता को आपकी कॉपी में पसंद आयी के आधार पर (लेकिन इन्हीं तक सीमित नहीं) पर दिए गए अंक हैं।			For Office Use Only / केवल कार्यालय प्रयोग हेतु	
			ECN CODE/ ईसीएन कोड :	Evaluation Date/ मूल्यांकन तिथि :
			EG/ईजी : ① ② ③ ④ ⑤	

Note: Students are expected to incorporate suggestions from the feedback provided in the answers. Discussion classes for the tests are also available online in your portal to aid in your preparation. Further, students are requested to see the good copies of the tests and learn from them. You can also discuss your copy with a Mentor and discover ways and means to improve your answers, or if you have any issues with this test / copy. Ask specific questions, to get specific answers.

EXAMINER'S REMARKS

CRITERIA FOR THE FEEDBACK SECTION AT THE END OF EACH QUESTION

1. **AWIS = Answered What is Asked.** This means whether you have addressed the core demand of the question or not. Addressing the core demand of the question gets you an objectively fair score. It is examiner's perception if you have understood the question and if you know the answer in the first place. Creative answer writing, sometimes missing the core demand, may fetch very high or very low scores, and exposes your answer to the subjectivity of the examiner.
2. **CD & VA = Content Density & Value Addition.** Examiner will evaluate the quality and quantity of your content in the answer. In the same word limit and space limit have you (a) written what is asked (b) gone beyond what is asked (c) enriched answers through combination of (but not all!) suggestions, ideas, quotes, flowcharts, diagrams, facts and figures, data etc. This affects objective components of assessment.
3. **S & F = Structure & Flow =** Whether you have structured your answer properly or not. Whether the answer has been broken into parts and sub-parts and each part has been addressed appropriately or not. Whether the flow of the answer is maintained. Affects both subjective and objective components of assessment.
4. **P & R =** How your answer performs on the criteria of presentation, ease of read, clarity and apparent effort in writing the answer. This affects the subjective components of assessment.



Q.1) Aditya L1 mission is an important milestone as India's first space based solar observatory. Enlist the major scientific objectives and the challenges of the mission. (10 marks, 150 words)

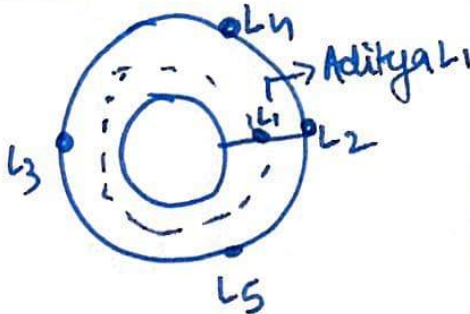
आदित्य L1 मिशन भारत की पहली अंतरिक्ष आधारित सौर वेधशाला के रूप में एक महत्वपूर्ण मील का पत्थर है। मिशन के प्रमुख वैज्ञानिक उद्देश्यों और चुनौतियों को सूचीबद्ध कीजिए। (10 अंक, 150 शब्द)

Aditya L1 as India's first space based solar observatory creates a 'pathway to the sun' and India's entry into the elite space club.

Major Scientific Objectives →

- ① Study of Sun, 1.5 million kms away from earth
- ② Analysis of layers of Sun: photosphere, chromosphere.
- ③ Study of solar flares and solar sun cycles (11 years)
- ④ Analyse coronal mass Ejections and impact.
- ⑤ Technological advancement in solar technology, advanced materials etc.

Challenges of the Mission



Sun and placement of Aditya L1

→ ① High cost and Difficult Technology

→ ② Placement at Lagrangian Point₁ requires precision

→ ③ Creation of advanced material, heat tolerant

→ ⑤ creating supply chain - advanced materials

⑥ Developing science around software etc. for end to end planning

Thus Aditya L1 has been a scientific marvel. Citizen Science Programme like 'Surya Graham' of ISRO has also increased citizen engagement.

Feedback

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.2) Describe briefly what gene therapy is and what advantages it has over other treatments?

(10 marks, 150 words)

संक्षेप में जीन थेरेपी का वर्णन कीजिए और अन्य उपचारों की तुलना में इसके फायदों को सूचीबद्ध कीजिए?

(10 अंक, 150 शब्द)

Gene therapy refers to treatments that target genes that can help cure the defective gene, or modify genes to help in treatment. It is the latest frontier of biotechnology.

What is Gene Therapy:

- ↳ ① Uses the science of modern biotechnology to target genes - causing diseases.
- ↳ ② CAR-T therapy for example enables use of gene therapy.
- ↳ ③ It heralds the era of precision and personalised medicine.
- ↳ ④ It uses methods like CRISPR-CAS which acts as 'genesissors' to complete therapy.

Advantages over
other treatments

- ① Chronic diseases or end of life diseases would need prolong treatment, gene therapy reduces the treatment time.
- ② Saves body from side effects of other prolonged treatments.
- ③ Personalised treatment - targeting the problematic gene.
- ④ may reduce chances of gene transfer to next generation.

Though it is an evolving science with challenges of cost, effectiveness, it is the next breakthrough of medicinal science that can improve quality of life and disease management.

Feedback

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.3) With recent advances in technology, robots are now equipped to perform more than just conventional and routine tasks which brings new opportunities as well as risks. In this context, evaluate the future potential of the robotics sector. (10 marks, 150 words)

प्रौद्योगिकी में हाल की प्रगति के साथ, रोबोट अब पारंपरिक और नियमित कार्यों से कहीं अधिक करने में सक्षम हैं, जो नए अवसरों के साथ-साथ जोखिम भी लाता है। इस संदर्भ में रोबोटिक्स क्षेत्र की भविष्य की क्षमता का मूल्यांकन कीजिए। (10 अंक, 150 शब्द)

Robots are technological marvels, machines trained with intelligence, deep learning to perform human like tasks.

ISAAC ASIMOV gave 3 principles of

- Robots
- 1) Do not harm humans
 - 2) Obey humans
 - 3) Do not harm oneself.

Opportunities	Risks
① Venture into prohibitive labour (e.g. manual scavenging). ② <u>Improve human efficiency</u> (e.g. manufacturing). ③ <u>Increase competitiveness</u> of multinationals (e.g. Amazon).	① <u>trolley dilemma</u>: of timely regulation ② Combining with Quantum tech, can become super human ③ Threats of job displacement.

Future Potential of Robotics Sector : An Evaluation

- ↳ ① Robotics can ensure safe handling of dangerous sectors (eg) BARC uses robots for radioactive disposal.
- ↳ ② future role in Robot assisted teaching, health, non invasive surgeries.
- ↳ ③ Key role in Disaster Relief and Response, with newer AI tech.
- ↳ ④ However, must prioritise human needs and not be disruptive
- ↳ ⑤ Unintended negative consequences must be curtailed by 'precautionary principle'.

Robotics can thus show the way to Fourth Industrial Revolution imagined by WEF's Klaus Schwab.

Feedback

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TOTAL MARKS			



Q.4) Private participation in propelling India's space journey is widely acknowledged but is yet to be fully tapped. In light of the statement, analyse the hurdles faced by the private sector and also recommend measures to unlock greater private participation in the space economy. (10 marks, 150 words)

भारत की अंतरिक्ष यात्रा को आगे बढ़ाने में निजी भागीदारी को व्यापक रूप से स्वीकार किया गया है लेकिन अभी तक इसका पूरी तरह से दोहन नहीं किया गया है। कथन के आलोक में, निजी क्षेत्र के सामने आने वाली बाधाओं का विश्लेषण कीजिए और अंतरिक्ष अर्थव्यवस्था में अधिक निजी भागीदारी को प्राप्त करने के उपायों की भी अनुशंसा कीजिए। (10 अंक, 150 शब्द)

Private sector Participation in space is accelerating with 1 startup in 2021 to over 200 in 2024, however India's space sector remains at a humble \$8 billion threshold.

@ Agnikool - Agnibaan, Skyroot

Hurdles remain:

- ① Challenge of finance and investment
- ② Space Technology generally has long gestation periods.
- ③ Regulatory hurdles: multiple points - NSIC, Department of Space.
- ④ Lack of space manufacturing supply chain
- ⑤ Lack of skilled workforce.

Unlocking greater private participation

↳ 1) Implementing the spirit of National Space Policy 2023 - allows greater private participation.

↳ 2) Attract FDI in space industry
(eg) Elon Musk's Space X

↳ 3) Reducing Regulatory Ambiguity!
(eg) NSIL vs. Anix

↳ 4) Launch PLI in space tech manufacturing: (eg) advanced materials, precision manufacturing.

↳ 5) Skilled workforce, increase funding to Indian Institute of Space Technology

finally, private sector in space must be bolstered to reach \$44 billion potential of India's space industry.

Feedback

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Q.5) Write an explanatory note on the causes and impacts of avalanches. Also, highlight the various strategies to mitigate its impact, with a special emphasis on NDMA guidelines. (10 marks, 150 words)

हिमस्खलन के कारणों और प्रभावों पर एक विवेचनात्मक टिप्पणी कीजिए। साथ ही, NDMA दिशानिर्देशों पर विशेष बल देते हुए इसके प्रभाव को कम करने के लिए विभिन्न रणनीतियों पर प्रकाश डालिए। (10 अंक, 150 शब्द)

Avalanches are similar to landslides in snowy regions, snow covered land, which may be destabilised and cause a disaster.

Causes	Impacts
→ 1) Soil destabilisation due to natural slopes → 2) Sudden ice falling, snow displacement → 3) Thawing, extreme precipitation → 4) Anthropogenic causes like construction	1) loss of <u>life</u> and <u>livelihood</u> 2) Biodiversity loss 3) Property damage 4) may hit <u>tourism</u> and <u>trade</u>. 5) Breakdown of <u>connectivity</u>.

Strategies to Mitigate Impact

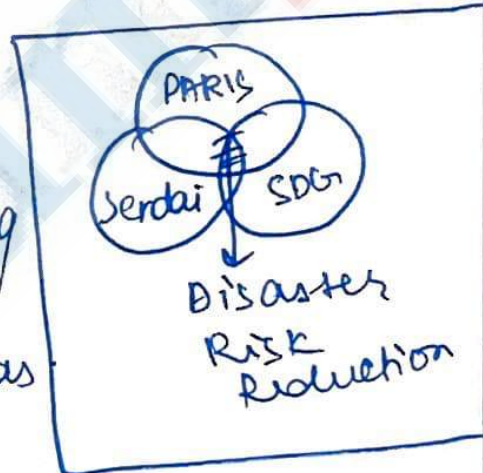
- ↳ (1) Slope Stabilisation measures
- ↳ (2) Protection of ecosystem, curb deforestation

- ↳ (3) Early warning Systems linked to mobile SMS/ Radio etc.

- ↳ (4) Satellite based assessment.

- ↳ (5) Hazard mapping

- ↳ (6) Disaster Risk Reduction by regulating human activities in disaster prone areas.



After disasters,

- 1) Evacuation (via Helipads)
- 2) Incident Response System (IRISMA) be activated
- 3) Medical treatment
- 4) Psycho-social Aid (WHO) and Building Back Better will be key.

Feedback

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.6) Technology plays a multidimensional role in augmenting the disaster management apparatus of the country. Discuss. Also, bring out the measures needed to enhance the usage of such technologies in managing disasters. (10 marks, 150 words)

देश के आपदा प्रबंधन तंत्र को बेहतर बनाने में प्रौद्योगिकी एक बहुआयामी भूमिका निभाती है। चर्चा कीजिए। साथ ही, आपदाओं के प्रबंधन में ऐसी प्रौद्योगिकियों के उपयोग को बढ़ाने के लिए आवश्यक उपाय सुझाए। (10 अंक, 150 शब्द)

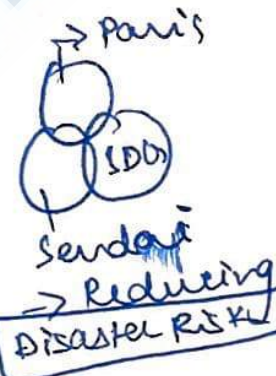
Disaster Management needs a 'whole of society response' that uses the tenets of disaster management Act, with the tools of technology for Disaster Risk Reduction.

Role of Technology

↳ ① Preventing Disasters,
reducing risk : (eg) tech
to measure Heat waves

↳ ② Disaster Risk mapping,
Zoning of Hazards : (eg) ISRO's
Bhuvan : RESOURCE SAT

↳ ③ Developing Early Warning System (eg) Assam + ISRO = FLEWS,
flood early warning.



↳ (1) Use of social media : (eg) Facebook
'Mark me safe', Ketto - crowdfunding

↳ (2) Technology for Disaster Evacuation
(eg) 'Bailey Bridge' - prefabricated
used in Wayanad.

Measures needed to enhance use

(1) Increase funding of NDRF, SDRF

(2) Training of forces of NDRF, SDRF in
tech use.

(3) Coordinated, cohesive district plans
for effective use.

(4) Training 'AAPDA MITRAS', locals
who respond in 'Golden hour' in
technology.

finally, implementing
technology with better planning
can lead to Disaster Risk Reduction

Feedback

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TOTAL MARKS			



Q.7) Discuss the natural and anthropogenic factors behind incidents of land subsidence. Suggest counter-measures to contain such incidents. (10 marks, 150 words)

भूमि अवतलन/भू धँसाव की घटनाओं के पीछे प्राकृतिक और मानवजनित कारकों पर चर्चा कीजिए। ऐसी घटनाओं को रोकने के लिए निरोधात्मक उपाय सुझाएँ। (10 अंक, 150 शब्द)

land subsidence is a recurrent disaster exacerbated by factors of climate change and anthropogenic activities, from the 'western Ghats to the Himalayas'

Natural	Anthropogenic
1) <u>Soil or slope Instability</u> 2) <u>Hydraulic influx or hydro seismicity</u> 3) <u>Extreme weather events</u> 4) <u>High intensity rainfall</u> 5) <u>Landburst</u> 6) <u>Volcanic eruption</u> 7) <u>Dam breakage, glacial lake burst</u>	1) <u>Deforestation</u> 2) <u>Unplanned construction</u> (eg) roads in Uttarakhand 3) <u>Massive plantation</u> (eg) 1000% in Wayanad 4) <u>Land mining</u> 5) <u>Ecological Disruption</u>

Counter measures

- A) Disaster Risk Reduction →
- ① Environment Impact Assessment under EPA 1986
 - ② Slope Stability measures
 - ③ Hazard and vulnerability mapping
 - ④ Planned development in fragile areas (eg: GADP's recommendations)

B) ~~Counter~~ Measures: Response

- ① Early Warning Systems
- ② Evacuation
- ③ Medical help, food bank, community kitchen
- ④ WHO: Psychosocial help
- ⑤ 'Back to home kits'

finally, Building Back Better, with planned ~~to~~ construction and resource use.

Feedback

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TOTAL MARKS			



Q.8) Explain Glacial Lake Outburst Flood (GLOF). Also discuss GLOF mitigation strategy with special reference to National Disaster Management Authority (NDMA) guidelines. (10 marks, 150 words)

ग्लेशियल लेक आउटबर्स्ट फ्लड (GLOF) का वर्णन कीजिए। साथ ही, राष्ट्रीय आपदा प्रबंधन प्राधिकरण (NDMA) के दिशा-निर्देशों के विशेष संदर्भ में GLOF शमन रणनीति पर चर्चा कीजिए। (10 अंक, 150 शब्द)

Glacial Lake Outburst Flood
refers to the disaster where
glacial lakes burst due to
sudden rain, or cloudburst



① Natural causes → glacial melt

② Climate change induced

③ Unplanned constructions

④ Human encroachments

⑤ Sediment deposition.

GLOZ Mitigation Strategy

↳ ① Natural barriers for glacial protection

↳ ② Natural Dams for stopping sudden flow

↳ ③ Hazard and Vulnerability mapping

↳ ④ Early Warning Systems - SMS, TV, Radio

↳ ⑤ Evacuation → Helicopters
→ Air force.

↳ ⑥ Medical Aid (Heli-Ambulances)

GLOZs from 'Chamoli to Sikkim'
only set to increase, NDMA guidelines
show the way

Feedback

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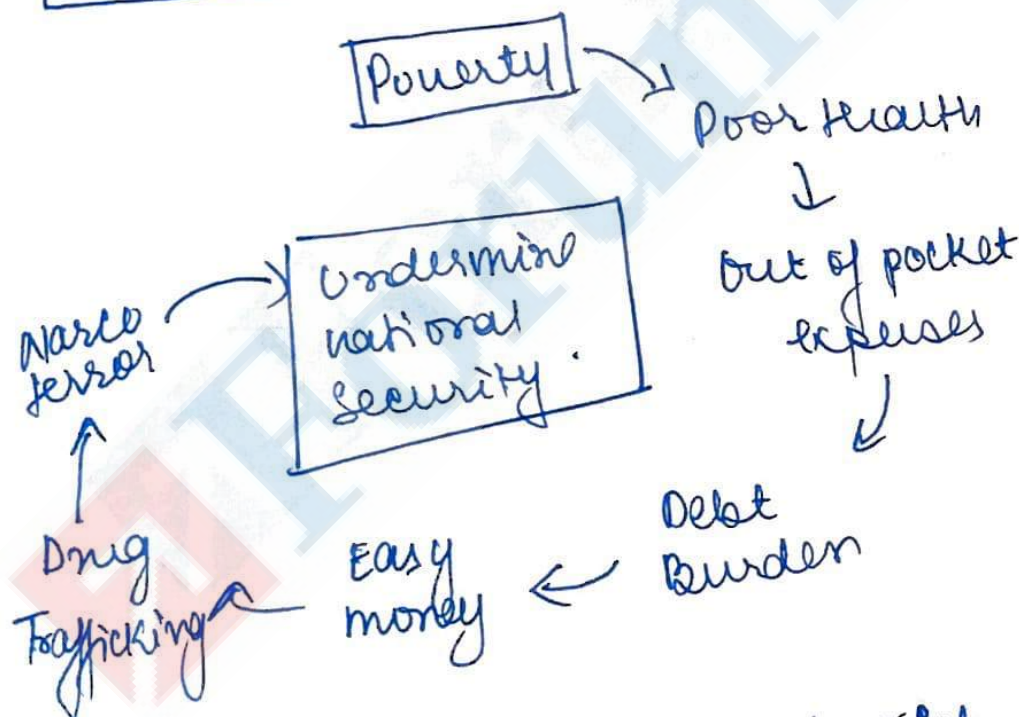


Q.9) National security challenges require sufficiently addressing the concerns of human security. Explain and suggest reforms for the same. (10 marks, 150 words)

राष्ट्रीय सुरक्षा की चुनौतियों का प्रभावी समाधान मानव सुरक्षा की चिंताओं को पर्याप्त रूप से संबोधित किए बिना संभव नहीं है। इस विषय पर विस्तारपूर्वक चर्चा करें और इसके लिए सुधारात्मक उपायों का सुझाव दीजिए। (10 अंक, 150 शब्द)

National Security involves multiple dimensions of human security.
Human security is both 'means and ends'

National Security - Human Security



- ① Poverty is the greatest violence.
- ② makes one prone to radicalisation

- ↳ ③ Poor health leads to an unhealthy workforce → economic insecurity
- ↳ ④ Poor education → increasing vulnerability → (eg) Indians recruited as 'helpers' in Russia scam.

Reforms →

- 1) National Security Strategy
 - a) greater spending: 9% on health and education
 - 3) focus on backward districts, border areas.
 - 4) Peace and prosperity via trust building → National Integration Council.
- hence National and Human Security go hand in hand.

Feedback

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TOTAL MARKS			



Q.10) Outlining the various cyber threats faced by India, assess the state of the country's preparedness to deal with the same. (10 marks, 150 words)

भारत को प्रभावित करने वाले विभिन्न साइबर खतरों का विस्तृत विश्लेषण करते हुए, देश की इन खतरों से निपटने की क्षमता का आकलन कीजिए। (10 अंक, 150 शब्द)

Cyber threats are the newest frontier of 'grey zone warfare' that threatens India's national security.

— Cyber threats —

1) Attack on critical infra →

(eg) China's APT → Maharashtra power grid.

2) Ransomware attack, encryption

(eg) ATMS, Sapping. Delhi

3) Cyber espionage — (eg) Pegasus

4) Deep fakes → for radicalisation

5) Deep, Dark web for illicit business.

Country's preparedness:

1) CERT-IN: Computer Emergency Response.

2) cyber assessments, Vulnerability assessments.

3) efforts of Cyber Hygiene pushed by GOI

4) what is needed

① Global coordination

② Cyber Response Team

③ more cohesive cyber strategy

finally, Cyber Security

needs technological boost via quantum computing and better firewalls.

Feedback

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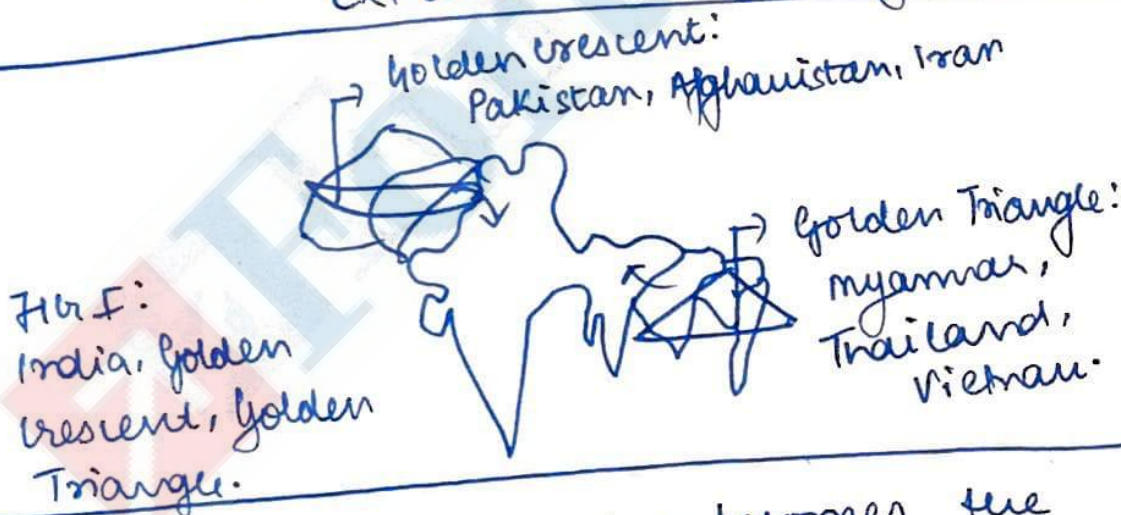


Q.11) Explain how the geographical location of India makes it extremely vulnerable to the menace of drug trafficking. What are the various internal security threats posed by drug trafficking? (15 marks, 250 words)

भारत की भौगोलिक स्थिति इसे किस प्रकार ड्रग तस्करी के लिए एक अत्यंत संवेदनशील क्षेत्र बनाती है? ड्रग तस्करी के कारण उत्पन्न होने वाले आंतरिक सुरक्षा के विभिन्न खतरों का विस्तारपूर्वक विश्लेषण कीजिए। (15 अंक, 250 शब्द)

Drug Trafficking in the South Asian, West Asian and South East Asian region converge to create networks that increases India's vulnerabilities. From Opium, Hashish, Meth to new age Fentanyl, India faces an allround challenge.

Geographical Location:
Extreme Vulnerability



① Golden Crescent region becomes the source of drug supply to North West India.

a. ↳ ② The Drug crisis of Punjab is exacerbated by the continuous supply

↳ ③ New age technology like unmanned Aerial Vehicles are also delivering cross border drugs over the Indo-Pak border.

↳ ④ from the Golden Triangle, unfenced border, earlier freemovement regime (with Myanmar) was exploited.

↳ ⑤ People to people contact in north east due to ethnic ties is also exploited.

Internal Security Threats

① creates Law and order crisis, Drug mafias and crime, ② in Punjab.

↳ ② Creates networks of drug supply and nexus with other illicit activities like human trafficking.

↳ ③ Boosts Terror finance, drug money by insurgents, (eg) ULFA.

↳ ④ Fiscal support to cross border terror in Jammu and Kashmir.

↳ ⑤ Narcotics Terrorism and Drug Addiction to Radicalise Youth.

Response needed → 1) NDPS Act to prosecute
→ 2) Comprehensive Integrated Border management system.
→ 3) Use EU's 'Bordersens': real time electrochemical analysis of drugs.
→ 4) Youth Deaddiction Programmes.

Coordinated action of Narcotics Control Bureau, Border Security Agencies in spirit of UN convention against Trans-national crimes is key.

Feedback

(For OFFICE use only)

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.12) Discuss the socio-economic impact of new developments in science and technology in India since independence. (15 marks, 250 words)

स्वतंत्रता के पश्चात् भारत में विज्ञान एवं प्रौद्योगिकी के नवीन विकासों के सामाजिक और आर्थिक प्रभावों का वर्णन कीजिए।
(15 अंक, 250 शब्द)

'The ultimate goal of science is social'
— former MP, Bimal Jalan

Science and technology's advancements
has enriched society and economy
in multifarious ways, from ISRO's
ResourceSat to CSIR's green trackers.

Socio-economic impact
of S & T

① Space Science has helped improved
access to Government Service, (eg) →
ISRO's Village Resource Centres.

② 'JIO REVOLUTION' through Optical
fibre Networks have heralded
into DIGITAL INDIA (eg) 24 GB
now average monthly use (NOKIA
report)

- ③ Ensured 'Education for all' in spirit of SDG 4 (eg) EDUSAT
- ↳ ④ Developments in science enabled 'Radiation Therapy', 'Laser surgeries', enabling pursuit of Uniersal Health coverage.
- ↳ ⑤ Pushed people and especially women for STEM education, (eg) through Indian Institute of Space Technology.
- ↳ ⑥ Improved quality of life, (eg) developing 'Jaipur foot' for differently abled.
- ↳ ⑦ Better disaster management prediction
↳ (eg) Assam + ISRO = Flood EWS
- ↳ ⑧ Created new manufacturing industries → (eg) precision manufacturing, precision navigation for Gaganyaan.

- ↳ ⑨ created entire science manufacturing supply chains and job creation
 (eg) defence corridor: UP, Tamil Nadu
- ↳ ⑩ Economic boost and growth:
 (eg) space sector to grow from present \$8 billion to \$44 billion.
- ↳ ⑨ impetus to new industries and companies, (eg) space startups grew from ① in 2021 to over 200 in 2024.
- ↳ ⑩ improved economic work and supply chain efficiencies, (eg) using robots in warehouses.

Thus science and technology developments have improved standard of living, new frontiers like nuclear medicine, quantum computing and India's space station can take this saga forward.

Feedback

(For OFFICE use only)

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.13) 5G technology is a breakthrough that finds applications across diverse sectors. Elaborate. How is 5G technology different from its predecessor? Also, list the various challenges associated with its effective rollout. (15 marks, 250 words)

5G प्रौद्योगिकी एक अभिनव तकनीक है जिसके अनुप्रयोग विभिन्न क्षेत्रों में पाए जाते हैं। विस्तारपूर्वक बताएँ। 5G प्रौद्योगिकी अपने पूर्ववर्ती से किस प्रकार भिन्न है? साथ ही, इसके प्रभावी कार्यान्वयन से जुड़ी विभिन्न चुनौतियों को सूचीबद्ध कीजिए। (15 अंक, 250 शब्द)

5G refers to the fifth generation of mobile network technology that has revolutionised telecommunications and has become key to the next phase of DIGITAL INDIA.

Application across Diverse Sectors

- ① Use in daily communication
- ② Reduced network congestion and higher efficiency, use in BPO sector.
- ③ Important for critical technology like edge computing
- ④ faster Data processing, important for advancing Quantum Science.

↳ Usage in Refence: to complement
satellite based communication.

5G - different from predecessors

- ① Improved speed and effectiveness
- ② Higher data processing.
- ③ Can be better used across
devices
- ④ Reduced network disruptions
and fluctuations
- ⑤ Enables use and application
across high data use sectors.
- ⑥ Predecessors like GSM, CDMA
based technology only worked
in some phones.

Challenges with Effective Rollout

↳ ① Developing required 5G tech

↳ ② Geopolitical Risks: kept Huawei out, limiting speed and reach.

↳ ③ Suitability with existing phone models need to be assessed.

↳ ④ High upfront cost in 5G development

↳ ⑤ Data costs will increase making it less attractive.

India must rollout 5G in every sector to be able to ride on the next (6G) bus and ensure Digitisation leads economy to the \$5 trillion goal.

Feedback

(For OFFICE use only)

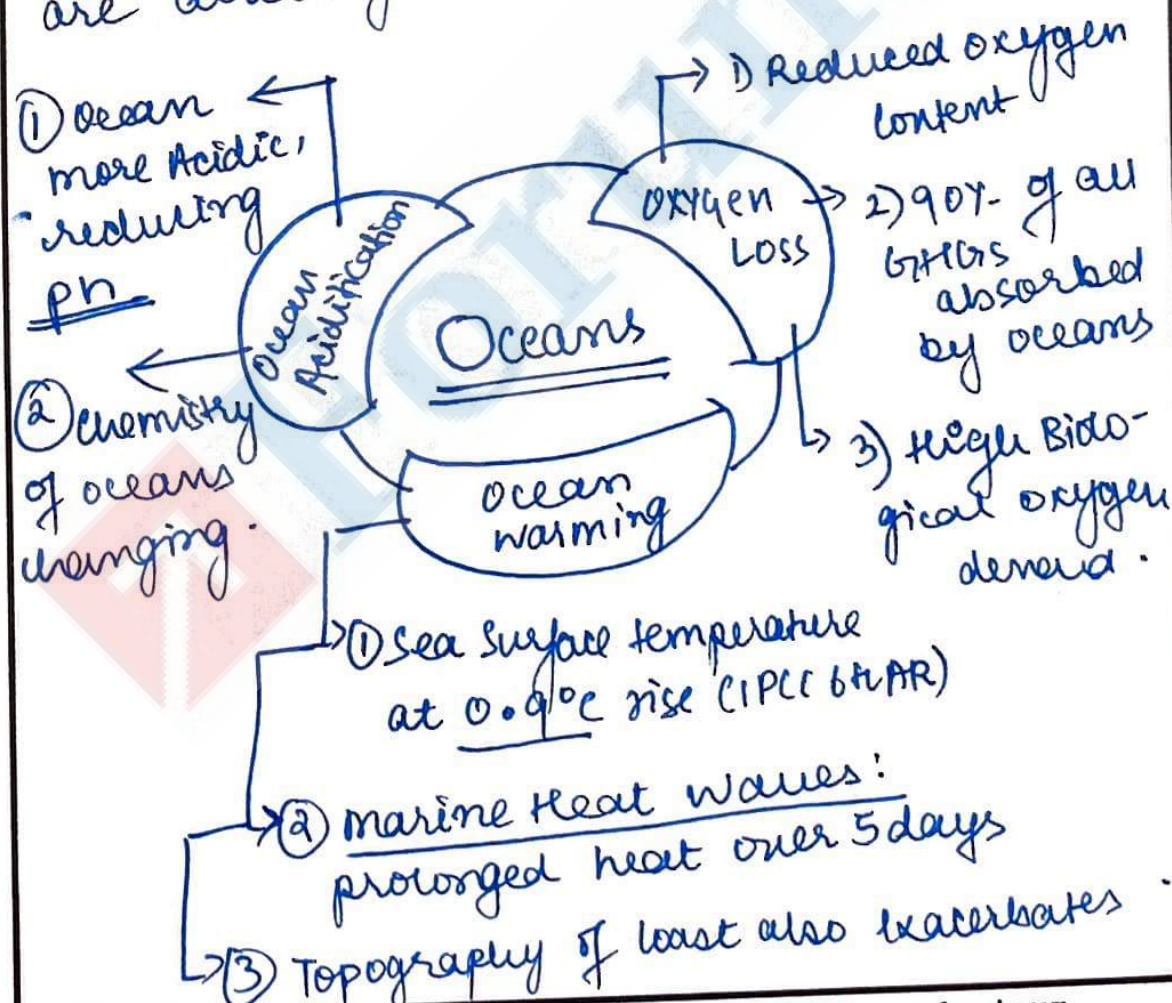
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TOTAL MARKS			



Q.14) Discuss the repercussions on marine ecosystem and economy resulting from the combined effects of ocean acidification, ocean warming, and oxygen loss. (15 marks, 250 words)

महासागरीय अम्लीकरण, तापन तथा ऑक्सीजन ह्रास के संयुक्त प्रभावों से समुद्री पारितंत्र एवं अर्थव्यवस्था पर पड़ने वाले परिणामों की विवेचना कीजिए। (15 अंक, 250 शब्द)

Tectonic shifts in ocean health, chemistry and composition are under way due to ocean acidification, warming and oxygen loss. According to IPCC 6th AR, sea surface temperatures are already above 0.9°C .



Repercussions : on Marine Ecosystem

- ↳ ① Sixth Mass Extinction under way due to biodiversity loss (eg) critically Endangered Andaman Jenkins Shrew.
- ↳ ② Mass Coral Bleaching Events : (4th) such event underway due to ocean warming.
- ↳ ③ Affects nutrient upwelling and nutrient profile.
- ↳ ④ Ocean currents disrupted : (eg) the Gulf Stream
- ↳ ⑤ Global Heat Transfer via ocean systems disrupted.

Repercussions : on Economy

- ↳ ① Corals offer \$2 trillion worth of services, but disrupted.
- ↳ ② Cultivation of seaweeds and ocean crops, hampered.

↳ ③ fishing grounds dependent on ocean currents hampered
④ Doggerbanks.

↳ ④ livelihood insecurity as dependence on ocean based resources
⑤ marine fisheries - Indian Ocean

↳ ⑤ loss of ecological disasters and response

Solutions for the same

→ ① National Action Plan on climate change

→ ② meet Paris Goals: 1.5°C pathway

↳ ③ marine protected areas

↳ ④ Ocean fertilisation: India-Germany 'LOHAFEX' with Iron

↳ ⑤ Carbon Capture and Storage

Newer technologies like marine cloud brightening and ocean science by INCOIS must be way forward.

Feedback

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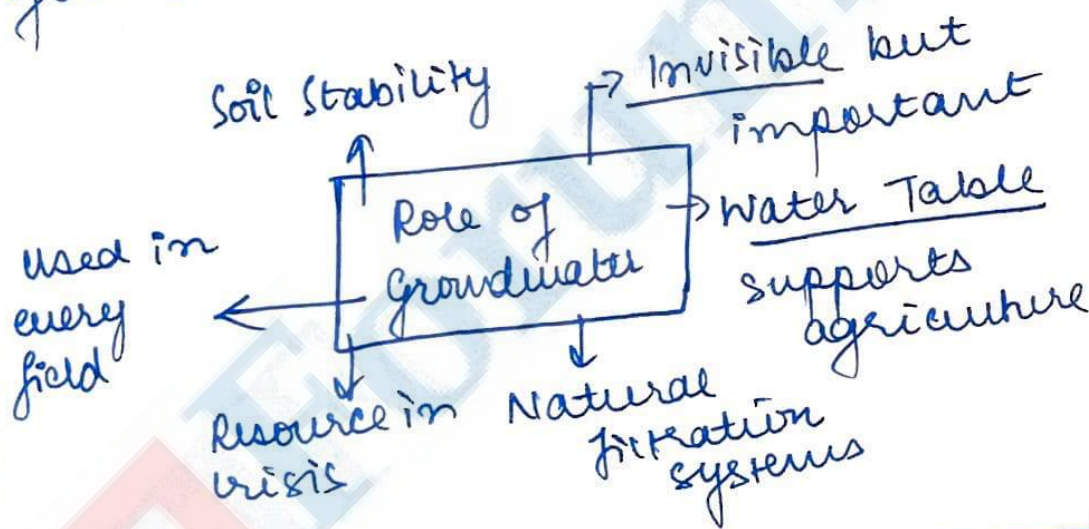
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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.15) The invisible nature of groundwater is a major obstacle in the path towards achieving the twin objectives of building climate resilience and meeting the Sustainable Development Goals (SDGs). Elucidate. (15 marks, 250 words)

भूमिगत जल की अदृश्यता जलवायु अनुकूलन एवं सतत विकास लक्ष्यों (SDG) को पूरा करने के दोहरे उद्देश्यों को प्राप्त करने की दिशा में एक प्रमुख चुनौती है। विस्तारपूर्वक वर्णन कीजिए। (15 अंक, 250 शब्द)

Groundwater is a critical repository of water resource that acts as the foundation of living from drinking water to agriculture. Its 'INVISIBALISATION' often causes its neglect.



A) BUILDING CLIMATE RESILIENCE

- 1) Groundwater assessment can help build plans for climate adaptation.
- 2) Climate Resilient Agriculture can

help balance groundwater conservation
with food production (eg) PoKKali
Paddy, Kerala (C.I. tagged)

↳ (3) Climate Resilient Urbanisation
must also incorporate balanced
G.W. use, (eg) WATER USE master
plans.

↳ (4) However, since G.W. is invisible
it is often not mapped and
overlooked. (eg) water guzzling crops
cultivated in drier areas of Punjab,
Haryana.

↳ (5) Similarly G.W. overuse are
creating uranium and arsenic
pollution in various regions.

==> B) Meeting SDGs

↳ (1) invisible nature of G.W. is
also impeding goals of poverty
eradication (SDG 1) as water

depletion is not accounted for.

↳ ② It is increasing gender inequalities (SDG 5) & neglect ② → in maharashtra 'water wives' to carry water

↳ ③ SDG goal (15) of life over land also impacted due to falling water levels in National Parks, ② Dudhwa National Park.

↳ ④ Water based conflicts also undermining SDG (16) (peace, justice)

Thus, groundwater preservation must be done through a) Resource mapping by central ground water Board b) wise use c) ASI like system for public communication.

USA model of 'water Reports' can also nudge communities for wise use.

Feedback

(For OFFICE use only)

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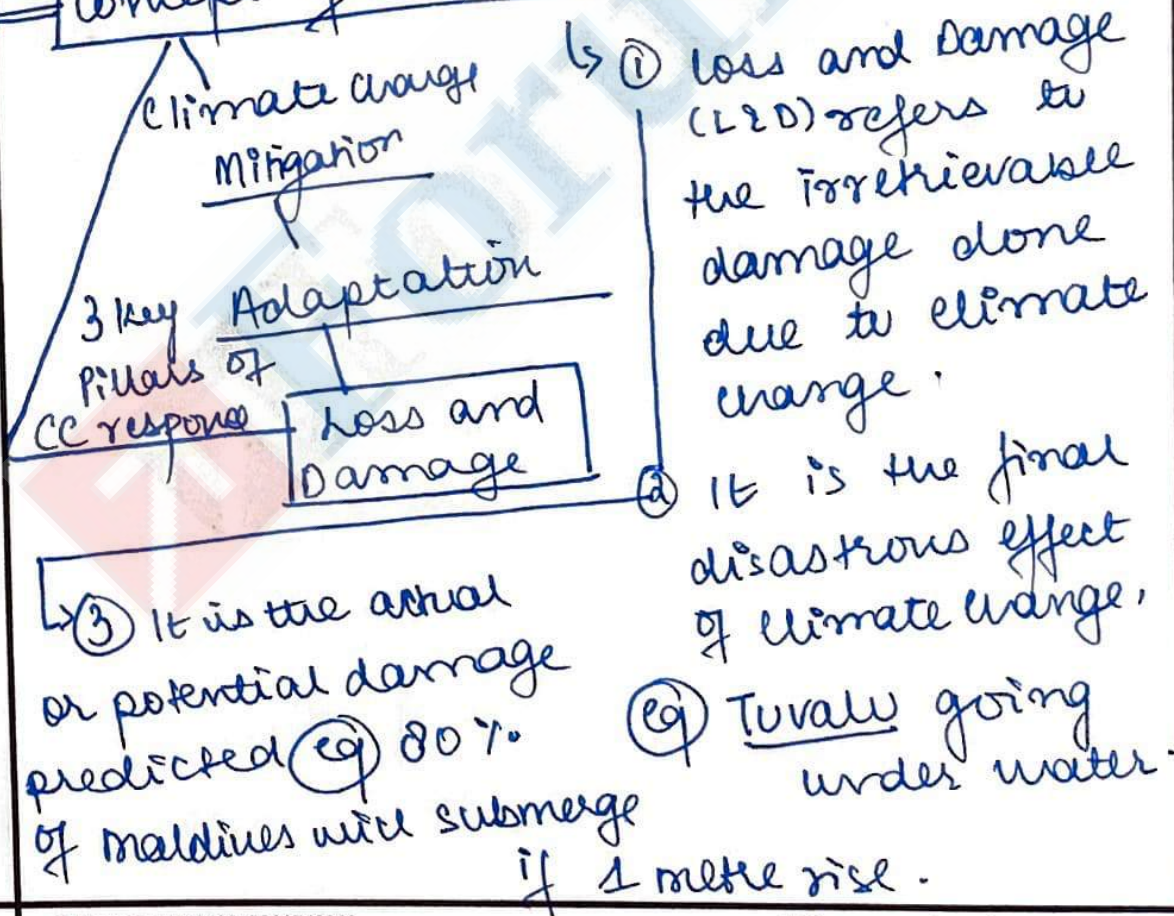


Q.16) Describe the concept of loss and damage and evaluate its relevance in ensuring climate equity.
(15 marks, 250 words)

हानि और क्षति (Loss and Damage) की अवधारणा का वर्णन कीजिए तथा जलवायु समानता सुनिश्चित करने में इसकी प्रासंगिकता का मूल्यांकन कीजिए।
(15 अंक, 250 शब्द)

Loss and Damage is one of the three critical pillars of Climate Change Action recognised under the Paris goals. The operationalisation of Loss and Damage fund at COP 28 has brought more light to it.

Concept of Loss & Damage (L&D)



↳ ④ loss and damage also represents the financial loss to communities and livelihoods (eg) damage due to higher cyclones in Arabian Sea.

↳ ⑤ loss and damage is ~~the~~ the frontier of climate action which can help pay for damages.

Relevance in Climate Equity

↳ ① Present climate change crisis is due to industrialisation of Global North, (eg) USA - 2nd largest emitter

↳ ② However, L&D is most suffered by countries of Global South (eg) in Bangladesh - Brashar Char Island.

↳ ③ crisis of development refugees due to climate change induced disasters (eg) Small Island States.

↳ (4) Common But Differentiated Responsibilities - Respective Capacities (CBDR-RC) is not realisable without a fund to support 'Building Back Better' after damages.

↳ (5) However, recent operationalisation of LLD fund is only first step

↳ (6) According to global landscape of climate finance, almost (85%) of all finance goes to mitigation, LLD is neglected.

↳ (7) It also suffers from challenge of accounting loss and damage, quantifying it.

Nevertheless, loss and damage remains central pillar of global efforts for a low carbon development pathway where climate justice is ensured.

Feedback

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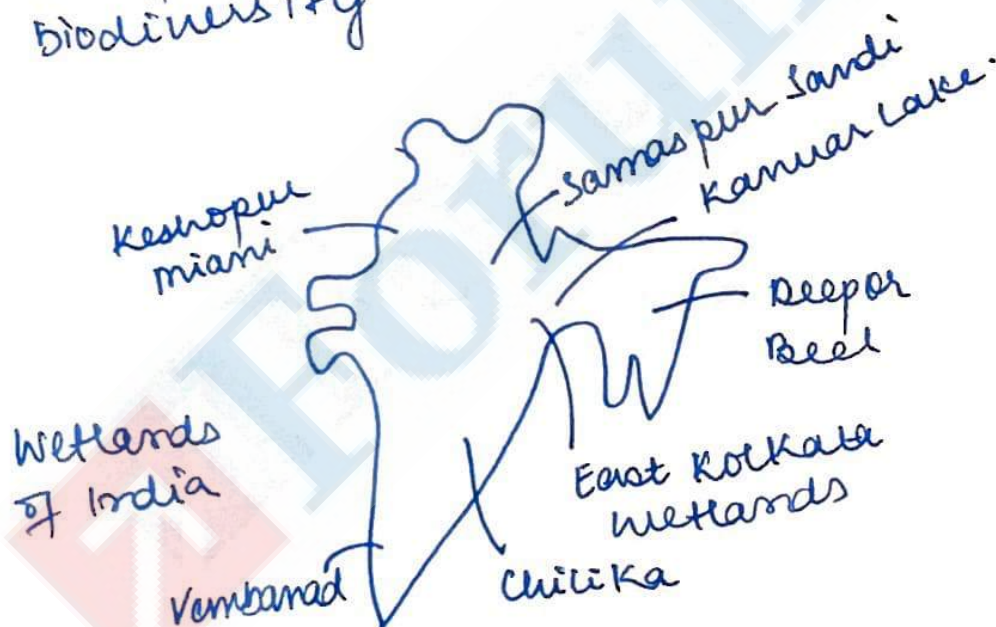
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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.17) What role does wetland play in expanding the framework of sustainable development? What are the challenges faced by wetland ecosystem? Discuss the corrective steps required for their effective conservation. (15 marks, 250 words)

आर्द्रभूमि धारणीय विकास के ढांचे को विस्तारित करने में किस प्रकार योगदान देती है? आर्द्रभूमि पारितंत्र किन चुनौतियों का सामना कर रहा है? इनके प्रभावी संरक्षण हेतु आवश्यक उपायों का वर्णन कीजिए। (15 अंक, 250 शब्द)

According to Article 1 of the Ramsar Convention, Wetlands are water bodies, standing or still water, with biodiversity and essential ecosystem role. Wetlands become the fulcrum of communities and biodiversity.



Role in expanding Sustainable Development → ① Supports Biodiversity, SDG 15: Life on Land, ② Deepor Beel.

↳ ② Supports Migratory Birds (eg) Siberian Crane.

↳ ③ Helps poverty reduction (SDG 1) → (eg) sustainable aquaculture, Keshopur Miani

↳ ④ Acts as 'Natural Kidneys', (eg) East Kolkata wetlands - sewage treatment.

↳ ⑤ Acts as sink of Blue Carbon, SDG 13 (Climate Action), (eg) Vembanad.

↳ ① human encroachments

↳ ② unplanned infrastructure, (eg) Itanai Barrage - Loktak lake

↳ ③ invasive Alien Species, (eg) African Catfish.

Challenges of
Wetland
Ecosystem

⑤ Overuse, depletion.

↳ ④ Eutrophication due to waste and pollution

Corrective steps for Effective conservation

↳ ① Wetland mapping using satellite technology.

↳ ② 'WISE USE' as per Ramsar guidelines to regulate economic use.

↳ ③ Regular cleaning, monitoring

↳ ④ Environment Impact Assessment (EIA) under EPA, 1986 for any project affecting wetlands.

↳ ⑤ Rooting out invasive Alien species, any introduction after scientific studies

conservation of wetlands in
spirit of IUCN 1980 conservation
strategy will be key.

Feedback

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.18) Despite various efforts, a lasting solution to the insurgency in the north-eastern region of India remains elusive. Analyse the reasons behind the continuation of insurgency in the region. Also, suggest effective measures to tackle it. (15 marks, 250 words)

विभिन्न प्रयासों के बावजूद, भारत के उत्तर-पूर्वी क्षेत्र में विद्रोह का स्थायी समाधान अभी तक नहीं मिल पाया है। इस क्षेत्र में विद्रोह जारी रहने के कारणों का विश्लेषण कीजिए। साथ ही, इसे निपटने के लिए प्रभावी उपायों को सुझाएँ। (15 अंक, 250 शब्द)

Insurgency in North East Area have remained a constant internal security challenge from the Naga movement of 1950s to the manipur crisis of present times.

Reasons behind Continuation

↳ ① Colonial legacy!
of neglect of North East Area.

↳ ② festering sense of Alienation due to geographical disconnect

↳ ③ Poor infrastructural connectivity,
only a 'SILIGURI WRRIDOR'

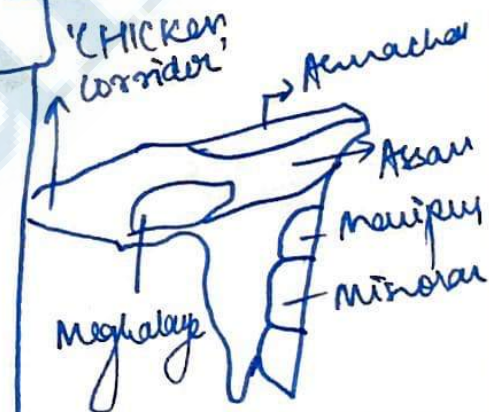


Fig I: map, North East

↳ ④ Distinct culture of North-East, family structures and values different, (eg) matrarchal structures in some tribes.

↳ ⑤ Development of underdevelopment: poor human development indicators

↳ ⑥ cross border ethnic ties: complicates 'idea of nationality'

↳ ⑦ Insurgent hideouts in neighbours, (eg) ULFA - Bhutan.

↳ ⑧ Drug and human trafficking across borders for insurgency finance.

↳ ⑨ Spillover of instability: (eg) due to Myanmar crisis - Rohingya influx.

Effective measures

→ ① Prioritise Development: dedicated ministry must design a plan.

↳ ② fasttrack economic investments planned with Japan

↳ ③ connectivity with neighbours to boost economy eg Kaladan multimodal project

↳ ④ Kinetic action over insurgents, on lines of Op Sunrise

↳ ⑤ Seek neighbourhood cooperation for intelligence and action

↳ ⑥ Diplomatic push like Miao Accords

↳ ⑦ Radicalisation of society: using UNESCO's recognised 'ABAOI' model.

finally, a Truth and Reconciliation Commission for crisis torn societies and a WTHAM = winning heart and minds approach can create peace and justice as per [IDG16].

Feedback

(For OFFICE use only)

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.19) While developmental initiatives have a significant role to play, they alone cannot root out terrorism/militancy in Jammu and Kashmir. Comment. (15 marks, 250 words)

जम्मू-कश्मीर में आतंकवाद/उग्रवाद के उन्मूलन के लिए विकासात्मक पहलें महत्वपूर्ण हैं, परंतु ये अकेले पर्याप्त नहीं हैं। टिप्पणी कीजिए। (15 अंक, 250 शब्द)

Jammu and Kashmir is the cradle jewel of India, yet also a terror hotspot due to a fraught history, bitter Partition and geopolitical turbulence. Recent attacks of Kathua, Reasi, in South of Pir Panjal reveal new fractures.

Significant Role of Developmental Initiatives

- 1) Revocation of Article 370: to bolster development
- 2) Relaxed land acquisition norms, are set to boost investments
- 3) Livelihood generation schemes means to productively employ youth

Siachen
Pakistan
J&K

map of J&K.

↳ for (eg) USTAAD Scheme

4) Improved connectivity with
rest of India (eg) Parvaz scheme

5) Provisions of Reservation extended
to SC, STs of J&K esp. tribals
to benefit, after 370 revocation.

6) Recognition of J&K as 'Crafts City'
to bolster craft production and
export (eg) Papier mache, Pashmina

Alone cannot root out terror

↳ 1) However, the resurgence of terror
making 'Jammu the New Kashmir'
reveal weakness of a mere
development strategy.

↳ 2) Cross border terror supported
by organisations like Jamaat
and support of ISI continue.

↳ ③ Geographical terrain, proximity to border aid terrorist movement

↳ ④ Support of Underground workers (ORWs) also enable hideouts for terrorists.

↳ ⑤ Terror finance through narco terrorism, via Golden Crescent also remains.

Therefore: →

① Recreate Operation Sarg Virash
Identify Hotspot → Establish Base → Clear out Terrorists.

② Deradicalisation of youth, especially the ORWs.

③ Persecution of terror supporters

④ Find diplomatic resolution with Pakistan.

the symptom of underdevelopment. Governance and Vajpayee's Kashmiriya and Insaniyat are the antidotes.

Feedback

(For OFFICE use only)

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			



Q.20) What do you understand by theaterisation of commands? Enumerating the impediments in theaterisation for India's armed forces, discuss the role of Chief of Defence Staff in enhancing the effectiveness of India's external security response. (15 marks, 250 words)

कमांड के थियेटराइजेशन से आप क्या समझते हैं? भारत के सशस्त्र बलों के लिए थियेटराइजेशन में बाधाओं का वर्णन करते हुए, भारत की बाह्य सुरक्षा प्रतिक्रिया की प्रभावशीलता को बढ़ाने में चीफ ऑफ डिफेंस स्टाफ की भूमिका पर चर्चा कीजिए। (15 अंक, 250 शब्द)

Theaterisation of commands is the next frontier of India's security architecture given the challenge of 'two front war' and 12 pincer diplomacy.

What is Theaterisation

① It refers to creating Strategic Theatres ^{eg} in Andaman and Nicobar.

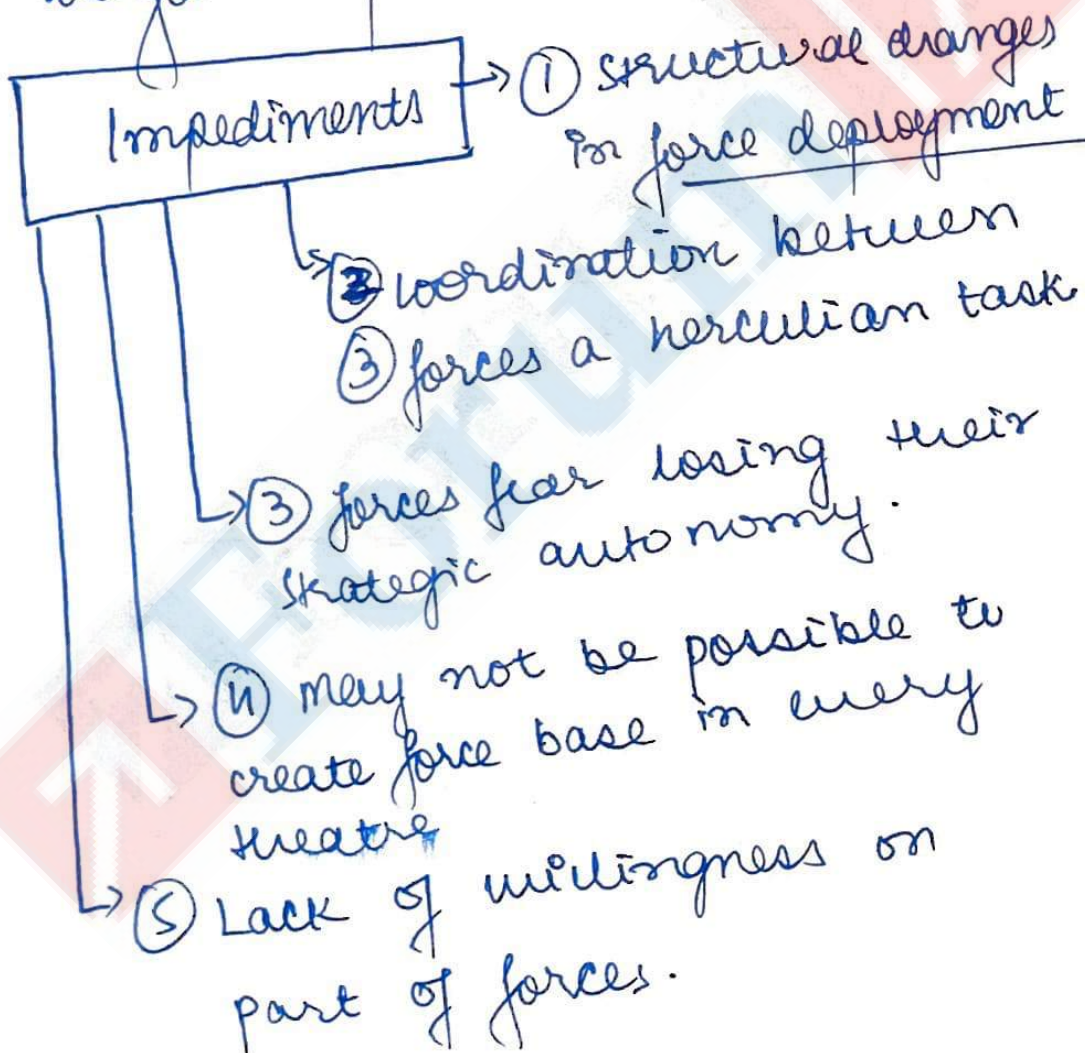
② It is combining resources and capabilities of Army, Navy, Air force.

③ It enables strategic wholeness across the three services.



Strategic theatres

- ④ It will lead to resource use
and planning to complement
capabilities.
- ⑤ in face of two nuclear neighbours,
it will strengthen conventional
warfare capabilities.



Role of COS in Theaterisation

- ↳ (1) COS can help resolve these impediments
- ↳ (2) He is a 4 star officer entrusted with powers of ~~Asp~~ recommending to the defence ministry.
- ↳ (3) As the 'chief' he can plan and reorganise forces to actualise theatre commands.
- ↳ (4) Resource use and force deployment can be planned.
- ↳ (5) He/she can iron out differences between 3 forces.
- ↳ (6) Plug the 'Absent Dialogue' CAnit mukherjee between ministry and forces.

However, in light of an emerging 'grey zone warfare' (COS Anil Chauhan), more than theaterisation, an all out 'National Security Strategy' is needed.

Feedback

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Please put tick marks in the above table. Here G is Good, A is Average and P is Poor.			
TOTAL MARKS			

Mentor Feedback Questions

- 1
- 2
- 3
- 4
- 5

Test Goal

- 1 ☐
- 2 ☐
- 3 ☐

Outcomes

-
-
-

Marking Scheme

Mark	Good	Average	Below average
10 Marker	3.75 – 5.0	3.0 – 3.5	< 3.0
15 Marker	5.75 – 7.0	4.0 – 5.5	< 4.0
20 Marker	7.75 – 10	6 – 7.5	< 6
✓✓	Key / Relevant Point		
✗	Vague / Irrelevant		

* Subject to change without prior notice.