

TEST CODE 8 1 3 4 0 7

MGP 2025

Time Allowed : Three Hours
समय : तीन घंटे

ForumIAS

Maximum Marks : 250
अधिकतम अंक : 250

GENERAL STUDIES / सामान्य अध्ययन

Name Of Candidate परीक्षार्थी का नाम	LIZA GARGA		
Roll No./अनुक्रमांक	1910071069	Medium/माध्यम	English <input checked="" type="checkbox"/> हिंदी <input type="checkbox"/>
Center Code/परीक्षा केंद्र	1901	Date/दिनांक	28/04/2025

*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		
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20		
Total/कुल अंक	250	

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।

2. There are TWENTY questions printed in ENGLISH & HINDI, all questions are compulsory.

उत्तर पुस्तिका में अंग्रेजी/हिंदी में बीस प्रश्न दिए गए हैं, सभी प्रश्न अनिवार्य हैं।

3. The number of marks carried by a question/part is indicated against it. प्रत्येक प्रश्न/भाग के लिए निर्धारित अंक उसके सामने अंकित किए गए हैं।

4. Answers must be written in the medium authorized in the admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided.

उत्तर प्रवेश पत्र में अधिकृत माध्यम में लिखे जाने चाहिए, जो कि दिए गए स्थान में इस प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के कवर पर स्पष्ट रूप से लिखा जाना चाहिए।

5. Word limit in questions, if specified, should be adhered to. Any page or portion of the page left blank in the Question-Cum Answer Booklet must be clearly Struck off.

प्रश्नों में शब्द सीमा, यदि निर्दिष्ट हो, का पालन किया जाए। प्रश्न-सह-उत्तर पुस्तिका में खाली छोड़े गये किसी भी पृष्ठ या पृष्ठ के भाग को स्पष्ट रूप से काट दें।

For Student Only / केवल परीक्षार्थी प्रयोग हेतु

Examiner's Discretion/मूल्यांकन कर्ता का विवेक :

Start Time/प्रारंभ करने का समय :

9:30 pm

End Time/समाप्त करने का समय :

12:50 pm

Total Marks/कुल अंक :

Mode Of Examination/
परीक्षा की विधि :Online/ऑनलाइन Offline/ऑफलाइन

For Office Use Only / केवल कार्यालय प्रयोग हेतु

ECN CODE/
ईसीएन कोड :

EG/ईजी :

① ② ③ ④ ⑤

Evaluation Date/
मूल्यांकन तिथि :

*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।

Note: Students are expected to incorporate suggestions from the feedback provided in the answers. Discussion of the tests are also available online in your portal to aid in your preparation. Further, students are requested to seek 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

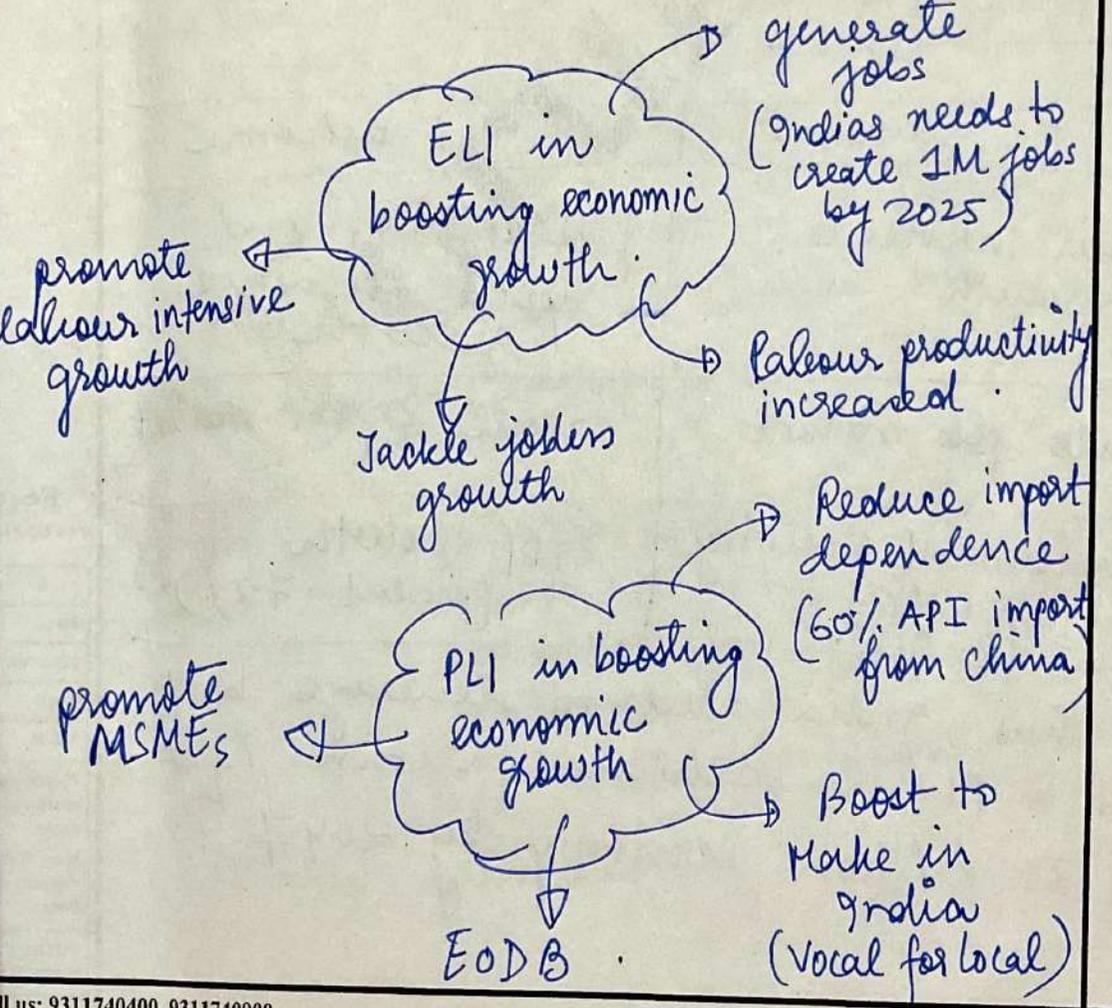
1. **AWIS = Answered What is Asked.** This means whether you have addressed the core demand of the question or not. Addressing the core demand of a question gets you an objectively fair score. It is examiner's perception if you have understood the question and if you know the answer in the question. Creative answer writing, sometimes missing the core demand, may fetch very high or very low scores, and exposes your answer to the subjective assessment 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 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 like 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 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 subjective components of assessment.

Q.1) While the Employment Linked Incentive (ELI) scheme and the Production Linked Incentive (PLI) scheme are both designed to boost economic growth, they employ different approaches and focus on distinct outcomes. Elaborate. (10 marks, 150 words)

जबकि रोजगार आधारित प्रोत्साहन (ELI) योजना और उत्पादन आधारित प्रोत्साहन (PLI) योजना दोनों को आर्थिक संवृद्धि को बढ़ावा देने के लिए प्रारंभ किया गया है, वे अलग-अलग तरीकों का उपयोग करते हैं और अलग-अलग परिणामों पर ध्यान केंद्रित करते हैं। सविस्तर वर्णन कीजिए। (10 अंक, 150 शब्द)

Employment linked incentive scheme refers to government promotion of manufacturers that generate high employment elasticity jobs.

Production linked incentive gives additional fiscal benefits to producers across sectors like automobile, electronics, pharma etc.



Differences in Approaches.

ELI	PLI
① Create labour demand	① Create Capital led demand
② Focus on labour productivity upgradation	② Focus on ICOR (Current ICOR = 4.5% GDP)
③ Bottom-up, supply driven	③ Top down, demand driven.

Focus on outcomes

ELI outcome	PLI outcome
labour intensive growth	productivity and capital intensive growth
create job market	create export market
employment elasticity improvement ($e = 0.15\%$)	GDP growth (present = 7.2%)

thus, india needs to leverage both ELI & PLI to achieve dream of \$ 35 trillion economy by 2047.

Q.2) What do you understand by Reverse Brain Drain? Identify the key drivers of the rising trend of this phenomenon in the country. (10 marks, 150 words)

रिवर्स ब्रेन ड्रेन से आप क्या समझते हैं? देश में इस घटना की बढ़ती प्रवृत्ति के प्रमुख कारणों की पहचान करें। (10 अंक, 150 शब्द)

Reverse brain drain is defined as the phenomena of bringing back the talent pool back into the country by offering high quality education, premium jobs and promotion to R&D.

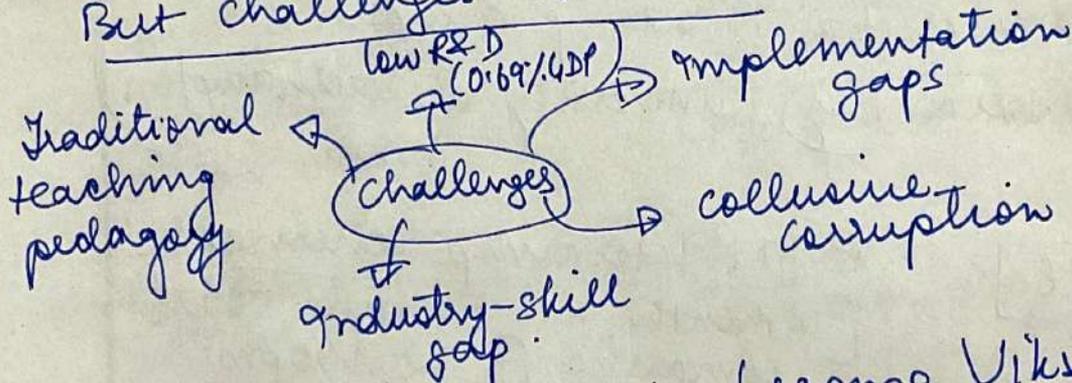
Key drivers of this rising trend

① **Education** → PPP in education to create Institutes of Eminence.
 → Clearance to 5 foreign Universities to set up campus in India (eg) (University of Southampton)

② **Skill** → PM Internship Scheme (12 month at Fortune 500 companies @ ₹5000pm Stipend)
 → Skill India Mission
 → promotion of ITIs

- ③ **Research**
 - PM Research Fund
 - Research Fellowships in IITs, IISc etc.
- ④ **Promotion to CET**
 - India AI Mission (AIKosh)
 - Semiconductor Mission
- ⑤ **Promotion to entrepreneurship**
 - Rs 10000cr Fund of Funds for Startup India
 - Exemption of Angel Tax
- ⑥ **Health and DPI**
 - Ayushman Bharat
 - Aarogya Setu, Adhaar
 - Digilocker etc.

But challenges remain



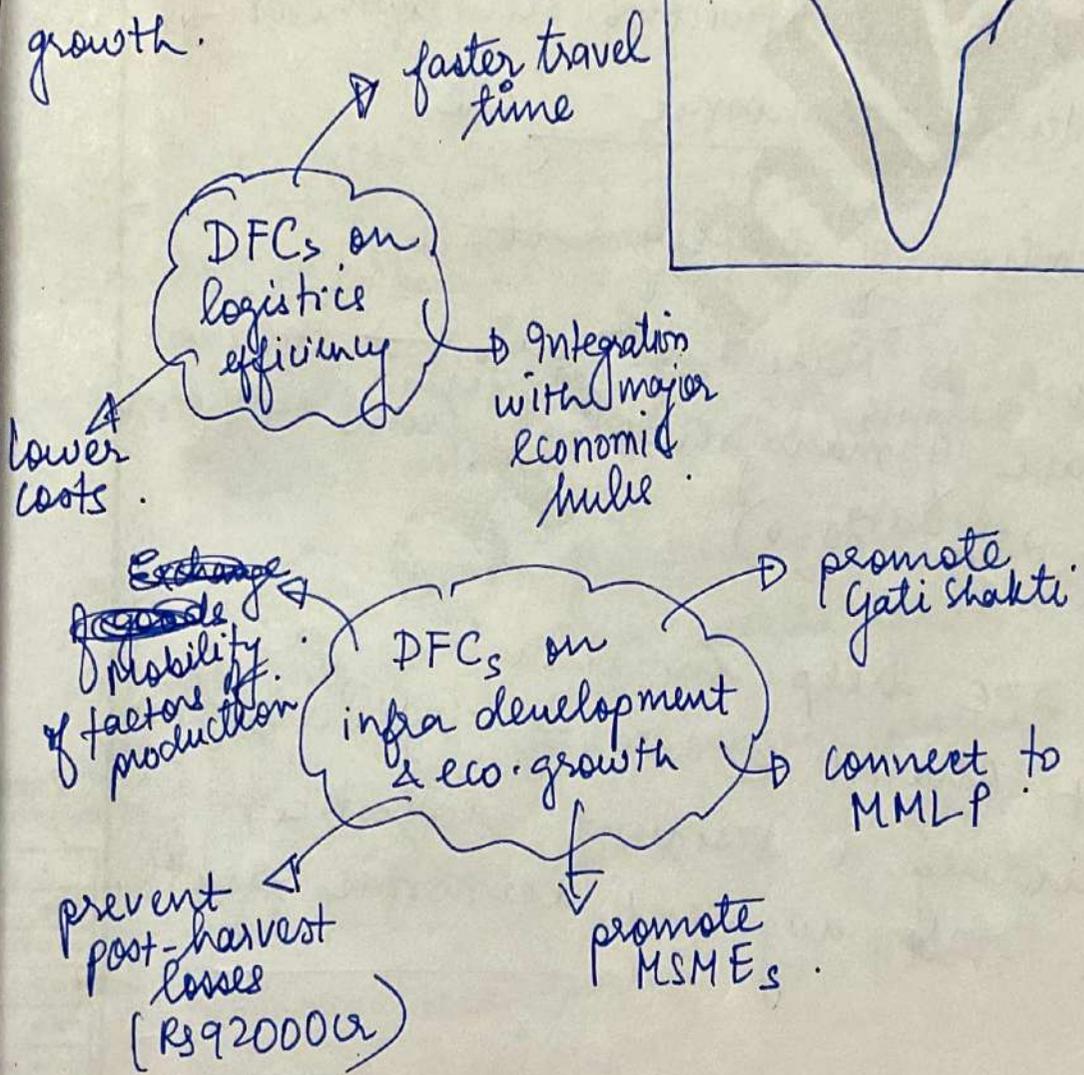
~~But~~ If India wants to become Viksit by 2047, it needs to capitalize on its demographic dividend through systemic social-economic engineering

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(For OFFIC)
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AWIS
CD & VA
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Please put marks in table.
Here G Average Poor.
TOTAL MARKS

Q.3) The Dedicated Freight Corridor (DFC) not only enhances logistics efficiency but also represents a pivotal milestone in the country's infrastructure development and economic growth. In this context, describe the significance of the Dedicated Freight Corridor. (10 marks, 150 words)

डेडिकेटेड फ्रेट कॉरिडोर (DFC) न केवल लॉजिस्टिक्स दक्षता को बढ़ाता है बल्कि देश के बुनियादी ढांचे के विकास और आर्थिक संवृद्धि में एक महत्वपूर्ण मील का पत्थर भी दर्शाता है। इस संदर्भ में, डेडिकेटेड फ्रेट कॉरिडोर के महत्व का वर्णन करें। (10 अंक, 150 शब्द)

DFC are conceptualized to improve logistics for better trade and economic growth.



Significance of Dedicated Freight Corridor

- ① Represents India's commitment to bring down logistics cost (present 18% GDP)
- ② Boost to infrastructure development → virtuous economic cycle
- ③ Creation of employment
- ④ Boost to Make in India → increase share of manufacturing from 17% (2024) to 25% (2030).

Thus DFC help in building a Viksit Bharat @ 2047 by leveraging on building a resilient logistics sector that augment economic growth.

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Please p marks i tabl.
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Poor.
TOTAL
MARKS

Q.4) Define precision agriculture. How can it help in optimizing crop production and resource management? (10 marks, 150 words)

परिशुद्ध/प्रिसिजन कृषि को परिभाषित करें। यह फसल उत्पादन और संसाधन प्रबंधन को अनुकूलित करने में कैसे मदद कर सकती है? (10 अंक, 150 शब्द)

Precision agriculture is defined as micro management in application of inputs such as irrigation, fertilizers, pesticides etc through remote sensors and Industry 4.0 technologies.

Role of precision agriculture in crop production optimization

- ① Promote efficient water usage.
(present only 21.6% microirrigation)
- ② Reduce weed growth (flood irrigation increases weeds by 15-20%)
- ③ Improve ^{crop} yields (FAO says precision agri improves yield by 31.7%)
- ④ Improve soil quality → prevent top soil erosion

Role of precision agriculture in resource management

- ① Lower virtual water export (³⁰⁰⁰⁻5000L of water is exported)
- ② Requisite fertilizer application
 ↓
 prevent soil pollution and eutro-
 phication (eg. Nitrate pollution
 in Alluvial plains)
- ③ optimum use of pesticides → lower
 toxicity and carcinogenicity
- ④ promote soil health → SHC
- ⑤ ~~Boost to horticulture~~
 Same on subsidy Bill (20% of GDP)

Thus, precision agriculture helps in boosting agri productivity from current 18%. It helps to achieve food security and holistic development of agricultural sector. (Dalwai Committee)

Q.5) Why has rice not seen similar innovation in processed food products compared to wheat, despite being a staple in many regions of the country? (10 marks, 150 words)

देश के कई क्षेत्रों में मुख्य खाद्यान्न होने के बावजूद, प्रसंस्कृत खाद्य उत्पादों में चावल के संदर्भ में गेहूं की तुलना में समान नवाचार क्यों नहीं देखा गया है? (10 अंक, 150 शब्द)

Rice is a staple food product for many states such as Assam, West Bengal, Andhra etc.

But it has seen less success vis-a-vis wheat in food processing sector.

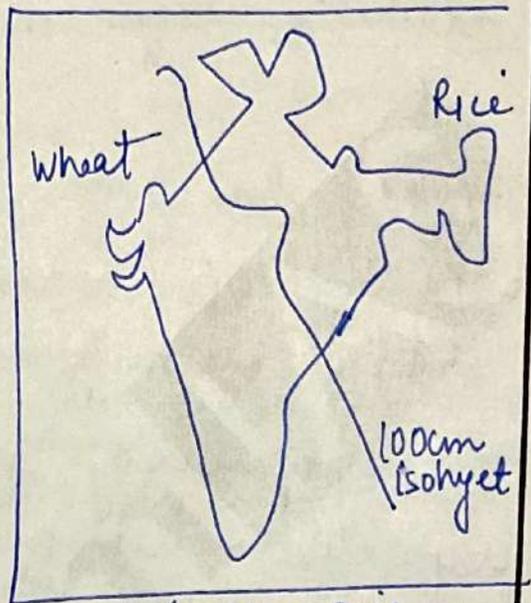


Fig showing rice - wheat system.

Reason for low success of rice compared to wheat in processed food :-

- ① Environmental concerns → Rice emits methane while wheat does not.
- ② More water requirement → Paddy needs 2000-3000 L for 1kg compared to wheat 1300-1500 L.
- ③ Rice robs the soil away from essential micro nutrients → Zn depletion hence less market demand among FPIs.

④ Wheat can be made into different products, rice has less value addition scope.

⑤ Paddy has more post harvest losses vis-a-vis wheat (Kharif crop)

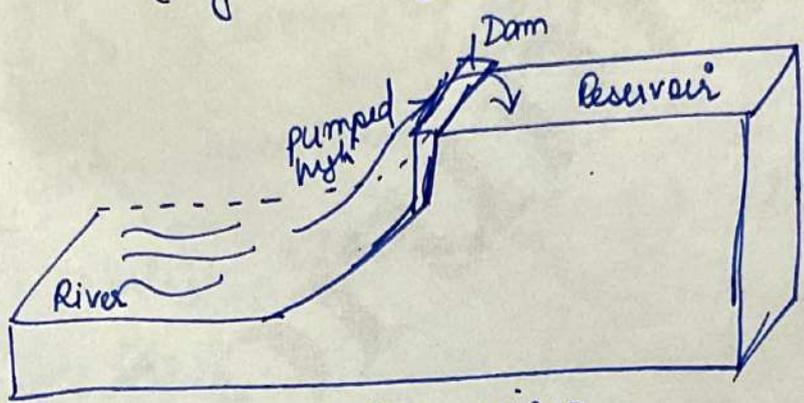
⑥ Stubble burning issue

Thus popularity of rice is comparatively less than wheat in food processing but with adequate measures like biofortification, waste residue management, post harvest management, FPI in rice can be improved.

Q.6) Explain the working principle of the pumped storage hydropower system. What are the key advantages it offers compared to other power storage technologies? (10 marks, 150 words)

पंप स्टोरेज हाइड्रोपावर सिस्टम के कार्य सिद्धांत की व्याख्या करें। अन्य पावर स्टोरेज तकनीकों की तुलना में इसके मुख्य लाभ क्या हैं? (10 अंक, 150 शब्द)

Pumped storage hydropower system operate against gravity to pump water from a lower hydro-geological level to an upper level reservoir for storage.
(eg: Mulla periyar, Parambikulam Dam)



Cross section view.

Working principle:

Advantages compared to conventional source :-

- ① Environment friendly construction
- ② More reliant ~~reservoir~~ source during lean period.
- ③ Tackles problem of flooding

Q.7) Describe the major outcomes of the 29th session of the Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). (10 marks, 150 words)

जलवायु परिवर्तन पर संयुक्त राष्ट्र फ्रेमवर्क कन्वेंशन (UNFCCC) के कॉन्फ्रेंस ऑफ पार्टिज (COP) के 29वें सत्र के प्रमुख परिणामों का वर्णन करें। (10 अंक, 150 शब्द)

UNFCCC COP 29 was held in Baku, Azerbaijan to meet climate change targets and enforce Paris Agreement provisions.

Major outcomes of COP 29 UNFCCC

- ① Tripling climate finance → \$100bn (COP15) to \$300bn by 2035.
- ② Baku Adaptation Roadmap.
- ③ Mobilize additional \$1.3 trillion by 2035.
- ④ Carbon Market Mechanisms.
- ⑤ Enforce Enhanced Transparency Framework.
- ⑥ Baku Workplan → involve indigenous communities.

⑦ promote gender inclusivity in climate change (Lima Work framework)

This COP29 UNFCCC have provided a roadmap to further Paris Agreement provisions and achieve SDGs by 2030

Q.8) How can emerging solar technologies address the twin challenges of resource scarcity and environmental degradation? Illustrate your answer with recent innovations in the field. (10 marks, 150 words)

उभरती सौर प्रौद्योगिकियाँ संसाधनों की कमी और पर्यावरण क्षरण की दोहरी चुनौतियों का समाधान कैसे कर सकती हैं? क्षेत्र में हाल ही में हुए नवाचारों के साथ अपने उत्तर को स्पष्ट करें। (10 अंक, 150 शब्द)

India is a high solar energy potential state with 330/365 solar insolation days. India currently has 110 GW of solar energy capacity. In this regard emerging solar technologies play a vital role.

Solar technology → address resource scarcity

- ① It is an unlimited energy supply (since India is a sub-tropical country)
- ② Easy recharge → (eg) solar batteries in devices like calculators etc.
- ③ Adequate ~~More~~ capacity factor → (eg) solar panels for trapping sunlight and converting it to electricity.
- ④ Solar wafers are easily assembled
↳ cost effective energy.

solar energy to address environmental degradation

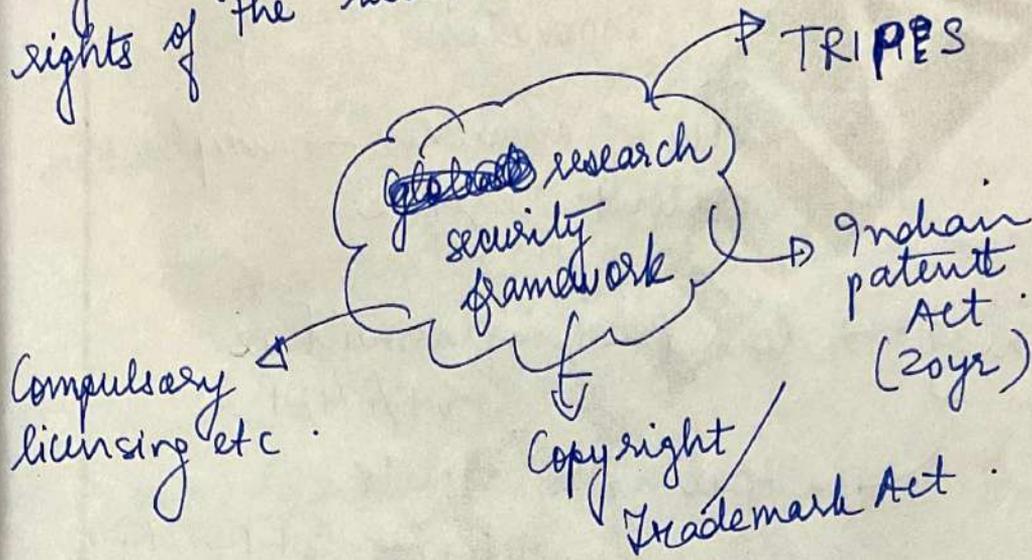
- ① No release of toxic wastes unlike thermal and nuclear plants
- ② Sustainable agriculture (eg: PM-KUSUM solarization of grid connected pumps)
- ③ Excess energy can be stored during use for deficit days (inclement weather)
→ circular economy
- ④ Seamless grid connection across continents (eg: OSWOG₂) → phase down fossil fuels.

Thus emerging solar technologies can propel global towards a \$7 trillion economy by 2030 and also achieve net zero 2040 and green economy.

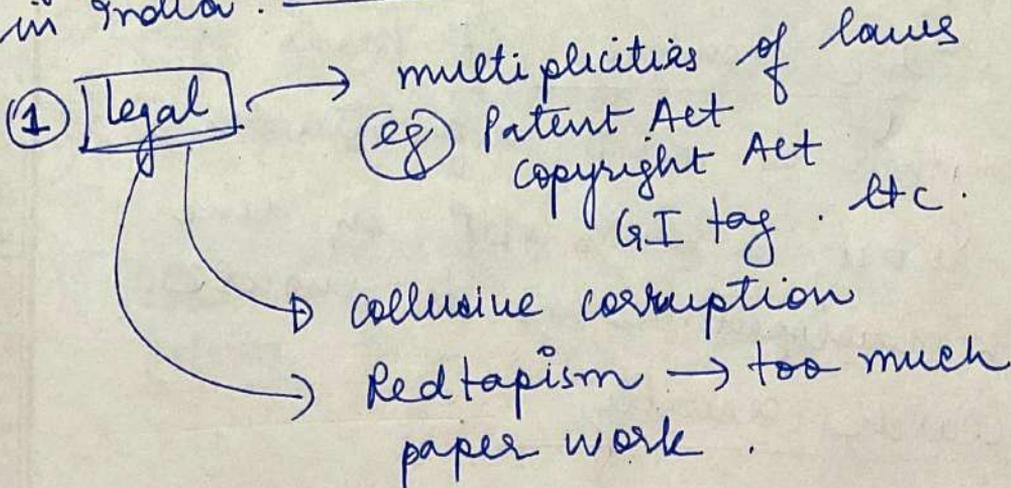
Q.9) What is 'research security'? What are the key hurdles in ensuring research security in India? (10 marks, 150 words)

'शोध सुरक्षा (Research Security)' क्या है? भारत में शोध सुरक्षा सुनिश्चित करने में प्रमुख बाधाएँ क्या हैं? (10 अंक, 150 शब्द)

Research security refers to IPR regime and protection of intellectual capital to preserve originality of innovation and uphold due rights of the researcher.



Key hurdles in ensuring research security in India: —



Administrative → lack of understanding of officials to tackle sensitive research work

Citizen → Blurred lines between traditional knowledge v. innovation
 → lack of awareness → complex patent regime

Technical → low R&D infrastructure (0.69% GDP)
 → stealing of secrets →
 (eg) honey trapping of ISRO/DRDO scientists.

Thus, if India wants to become a knowledge economy, it needs to strengthen its R&D infrastructure to about 2-2.5% GDP in line with developed nations to ensure research security.

Q.10) The Armed Forces (Special Powers) Act, 1958 (AFSPA) is necessary for maintaining peace and stability in the 'disturbed areas'. Critically examine. (10 marks, 150 words)

सशस्त्र बल (विशेष शक्तियाँ) अधिनियम, 1958 (AFSPA) 'अशांत क्षेत्रों' में शांति और स्थिरता बनाए रखने के लिए आवश्यक है। (10 अंक, 150 शब्द)
आलोचनात्मक परीक्षण करें।

AFSPA 1958 is a draconian law that gives sweeping powers to armed forces to conduct pre-emptive operations (Art 4) with full immunity (Art 6, AFSPA) in disturbed areas (Art 3, AFSPA).

Arguments in favour of AFSPA

- ① Maintain law and order and curb home-grown terrorism (eg J&K, Manipur)
- ② Preserve territorial integrity and sovereignty (Art 355, Indian Constitution)
- ③ Show zero tolerance on violence
- ④ Dual doctrine → offensive defence for national interest

Arguments against AFSPA

- ① Trigger alienation towards Indian government
(eg) From Sharmila's hunger protest to end AFSPA
- ② Promote further insurgent tendencies (political vacuum)
↓
legitimize militancy)
- ③ Atrocities committed by Army personnel in name of security
(eg) Killing on mere suspicion
Rape of women (eg: Mothers Nucle protest in Manipur)

Thus by implementation of B.R Jeevan Reddy Committee recommendations and practising Smit Ganguly's winning hearts and minds strategy AFSPA can be tinkered with compassion to enforce justice as well as law & order.

Q.11) How has inadequate progress on factor market reforms impacted India's double-digit growth aspirations? What measures has the government taken in this regard? (15 marks, 250 words)

कारक बाजार सुधारों (फैक्टर मार्केट रिफॉर्म्स) पर अपर्याप्त प्रगति ने भारत की दोहरे अंकों की विकास आकांक्षाओं को कैसे प्रभावित किया है? सरकार ने इस संबंध में क्या उपाय किए हैं? (15 अंक, 250 शब्द)

India's present GDP growth rate is at 7.2%.
 India aspires to grow at 10-11% to achieve
 debt-to-GDP ratio at 50±1 (2030) and
 a \$7 trillion economy by 2030.

Ways how inadequate market reforms has impacted growth

① LABOUR MARKET

- (a) low skill set of labour (only 2% in vocation; USA → 98%)
- (b) lack industry 4.0 knowledge on AI/Blockchain/Big Data etc.
- (c) Stringent labour laws → promote Dwarfism of industries and casualization of labour
 (eg) Industries Dispute Act

② CAPITAL MARKET

- (a) High ICOR = 4.5% ; global avg 2.5-3.5% .
- (b) Import dependency → (eg) 60% APIs imported from China .
- (c) Dependence on fossil fuels (49.1% energy on coals)
- (d) supply side inflation → vulnerable to global supply chain disruptions

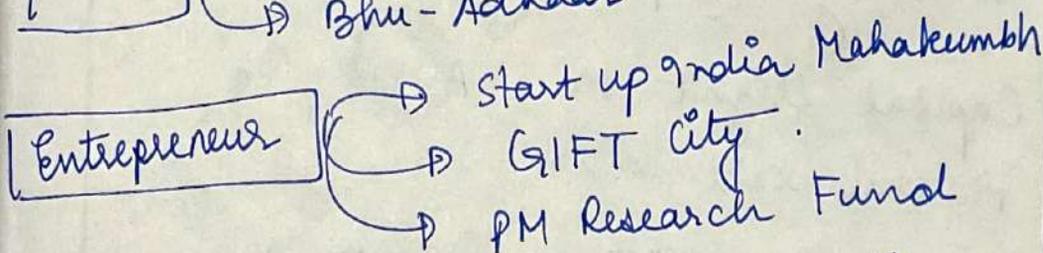
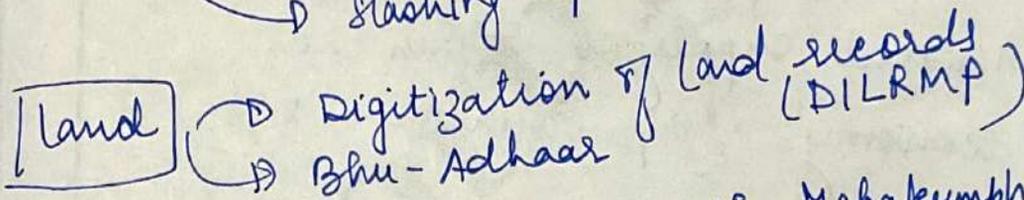
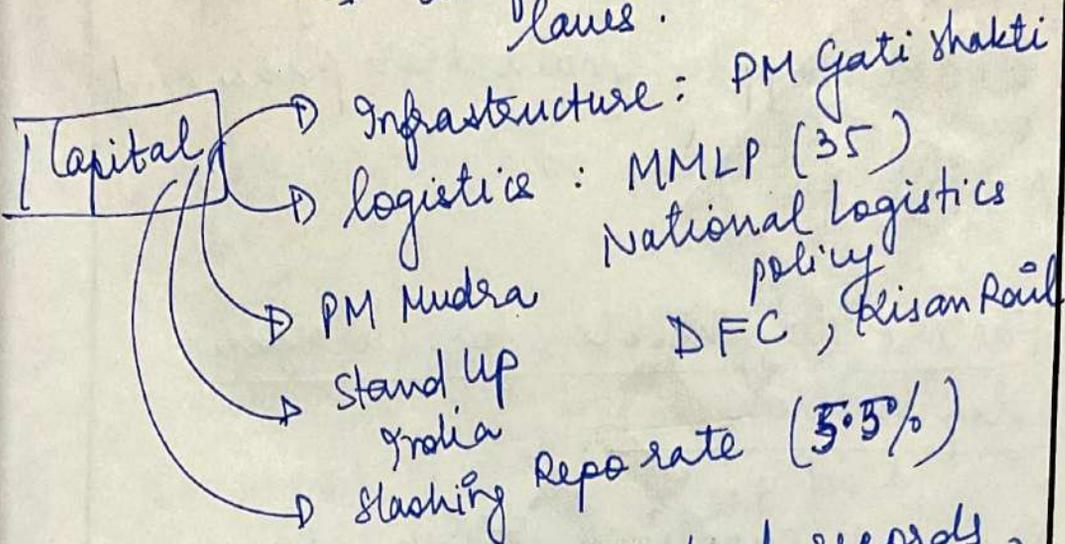
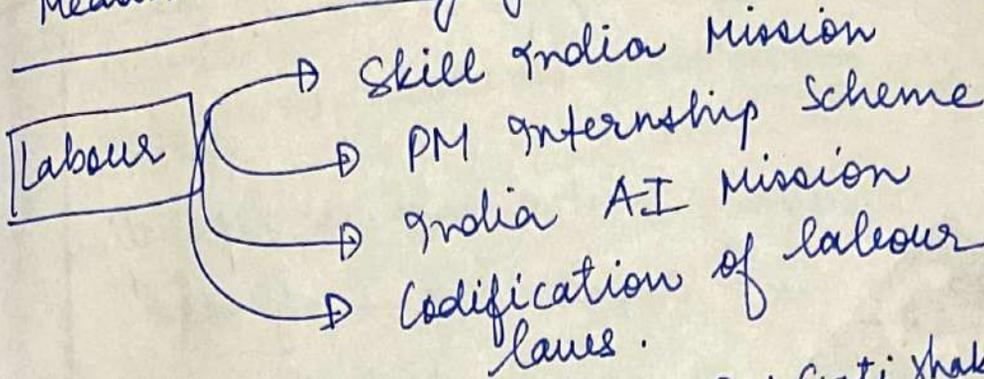
③ LAND MARKET

- (a) Fragmented Land holding (avg size = 1008 ha)
- (b) Inconclusive land titles .

④ ENTREPRENEUR MARKET

- (a) low R&D (0.69% GDP)
- (b) Risk averse (eg) Dukan deari approach to startups .
(eg) Zomato, Nykaa

Measures taken by government



Thus India needs to leverage on its market reforms to become Viksit Economy by 2047.

Feedback

(For OFFICE use only)

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P & R			

Please put tick marks in the above table.

Here G is Good, A is Average and P is Poor.

TOTAL MARKS	
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Q.12) What are the factors responsible for the recent depreciation of the Indian Rupee? Discuss its implications for the economy and suggest policy measures to stabilize the currency. (15 marks, 250 words)

भारतीय रुपए के हाल ही में हुए अवमूल्यन के लिए कौन से कारक जिम्मेदार हैं? अर्थव्यवस्था पर इसके प्रभावों पर चर्चा करें तथा मुद्रा को स्थिर करने के लिए नीतिगत उपाय सुझाएँ। (15 अंक, 250 शब्द)

Indian currency witnessed a depreciation of ₹88/\$1 in recent times fuelled by global supply chain disruption and USA-China trade war.

Factors responsible for currency depreciation

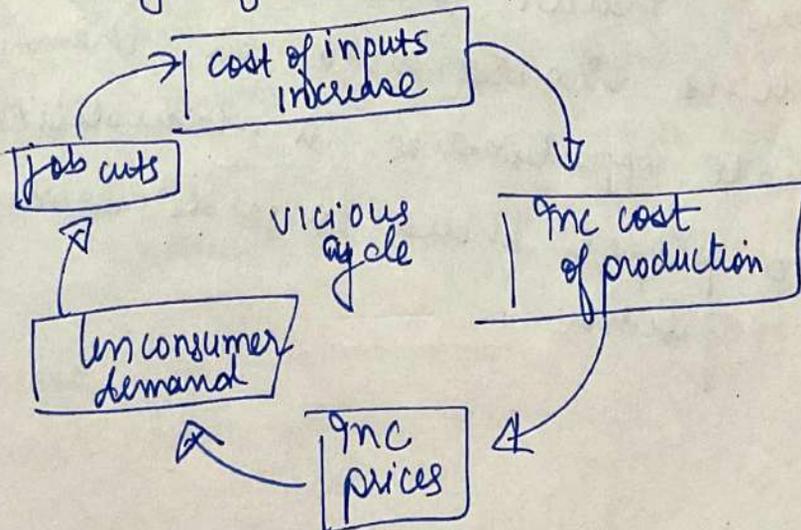
- ① Increased supply of ₹ in the economy (Repo down to 5.5%)
- ② Capital flight to USA due to Federal rate hike
- ③ outflow of FPI → India is witnessing a maturing bond market phase
- ④ Loan repayments of External Commercial borrowings (current debt-to-GDP ratio is 83%)

⑤ Reluctance of FDI to visit India owing to global recession
 (IMF data → global economic growth sluggish at 3.2%)

Implications of depreciation on the economy

- ① Costlier Imports → India depends on import of crude, edible oil, coal etc → Higher import bill
- ② supply side cost-push inflation

③ Tendency of vicious cycle



- ④ However, exports may see rise
 (eg) India touched \$ 778 bn exports
 in 2023-24.

policy measures to stabilize the economy.

- ① RBI to suck out rupee by issuing G-sec (Reverse Repo)
- ② Go for Market Stabilization scheme.
- ③ Hike CRR rates, increase MSF
SLR LAF
SDF
- ④ Reforms in tax-slabs (Fiscal)

Thus, India's fiscal and monetary policies should work in them to create opportunities in absurdities to propel India towards economic growth.

Q.13] While Farmer Producer Organizations (FPOs) can resolve the issues of small farmers and boost agrarian economy, the realization of their potential is hindered by a multitude of factors. Analyze Disadv ways (15 marks, 250 words)

जबकि किसान उत्पादक संगठन (FPOs) छोटे किसानों की समस्याओं का समाधान कर सकते हैं और कृषि अर्थव्यवस्था को बढ़ावा दे सकते हैं, लेकिन उनकी क्षमता का एहसास कई कारकों से बाधित है। विश्लेषण करें। (15 अंक, 250 शब्द)

FPO are groups of Farmers and Farmer associations that come together to collectively pool their resources to increase agricultural output, better price recovery and secure better forward (market) linkages.

Ways FPO resolves issue of small farmers and boost agrarian economy

- ① India has 89% of small and marginal farmers → FPO strengthen their producing and bargaining ability.
- ② Leverage Farm to Fork linkages.
(eg) connection to Food processing industries.
- ③ Increase farmer income → boost rural consumption demand.

④ Diversify to ancillary sectors
 (eg) dairy, horticulture, poultry, fishery etc.

⑤ pooling resources → scope of mechanized farming, precision agriculture

Factors hindering potential of FPOs

① social cleavages of caste and religion.

② Traditional credit from moneylenders

③ Lack of modernization → no technology disbursed by common service centres / custom hiring centres

④ Political interference backed by Ashtas (middlemen)

⑤ Land title issues / patta issues

Steps that should be taken.

- ① Linkings FPOs to PACs and Agri Infrastructure Fund
- ② Computerization of Custom hiring centres
- ③ Subsidy for technology adoption by FPO eg Remote sensing etc.
- ④ Digital Agriculture mission (AGRISTACK and Krishi DSS)
- ⑤ Promote farm mechanization (SMAAM)
- ⑥ Land Record Modernization (DIRLMP)

Thus incorporation Ashok Dalwai Committee recommendations FPOs can be strengthened to boost agriculture productivity and double farmers income.

Feedback

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TOTAL MARKS			

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Q.14) Discuss the significance of aquaculture towards nutrition security, livelihood generation, and economic growth. Also mention various initiatives taken by the government to promote sustainable aquaculture in the country. (15 marks, 250 words)

पोषण सुरक्षा, आजीविका सृजन और आर्थिक संवृद्धि के लिए जलीय कृषि के महत्व पर चर्चा करें। देश में धारणीय जलीय कृषि को बढ़ावा देने के लिए सरकार द्वारा की गई विभिन्न पहलों का भी उल्लेख करें। (15 अंक, 250 शब्द)

Aquaculture is defined as the practice of cultivating plants in aquatic conditions along with rearing of fisheries, shrimps etc.

Significance of aquaculture for nutrition security

- ① Navigate extreme weather events (Droughts) → ensure food supply.
- ② Fisheries give omega 3 fatty acid and important proteins to body.
- ③ Tackle problem of hidden hunger (nutrient deficiency) by ensuring balanced diet supply.

Significance in livelihood generation

- ① Alternate source of income by fisheries/shrimp
- ② Create jobs → tackle disguised unemployment in agriculture.
- ③ SHGs in blue-green economy → financial empowerment of women

Significance in economic growth

- ① promote Blue economy.
- ② Boost agri exports (Target to reach \$100bn by 2030)
- ③ Create forward linkages → boost Food processing in industries
- ④ Boost consumption demand
(eg) Canned fish.
- ⑤ Increased income → help raise per capita income → on path to overcome middle income trap.

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(eg) canned fish.
- ⑤ Increased income → help raise per capita income → on path to overcome middle income trap.

- ⑥ Inclusive growth
- ⑦ promote labour intensive, holistic agro-food sector.

Initiatives taken by Government

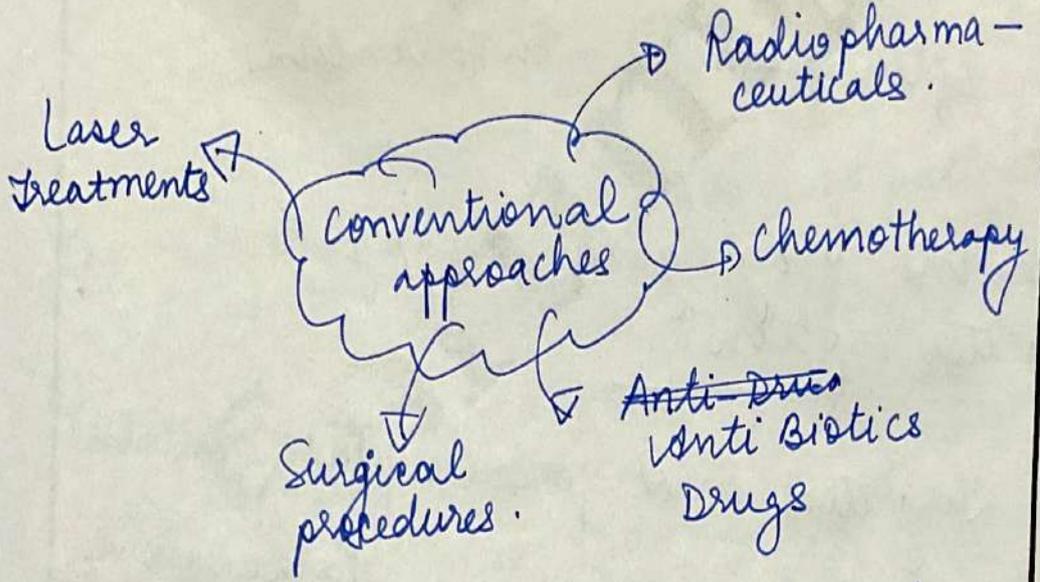
- ① PM Matsya Sampada Yojana
(Fish production to 22 MMT)
55 lakh jobs
- ② Mega Food Park Scheme.
- ③ MISHTI → for mangroove and shrimp cultivation
- ④ Horticulture Mission
- ⑤ Agriculture Infrastructure Fund
- ⑥ Digital Agriculture Mission

Thus, through aquaculture, govt seeks to leverage on blue-green economy to achieve \$ 7 billion target by 2030.

Q.15) What is gene therapy? What makes it a better treatment option than the conventional approaches? (15 marks, 250 words)

जीन थेरेपी क्या है? पारंपरिक तरीकों की तुलना में यह बेहतर उपचार विकल्प क्यों है? (15 अंक, 250 शब्द)

The gene therapy is \$ 30bn market (2024-25).
 Gene therapy refers to the use of human genome code to alter specific codons using molecular scissors (Cas9) to treat non-communicable diseases (palliative care)



Draw backs of conventional approaches

- ① lack precision → probability of degradation of healthy body cells.

- ② cytotoxicity due to recurrent drug use.
- ③ ~~By~~ High Relapse rate (eg) Cancer
- ④ longer duration of treatment
- ⑤ Weaken B and T lymphocytes → affect on immunity.
- ⑥ often painful interventions

Reasons why gene therapy is a better option

- ① Targetted and precise intervention
- ② Alters gene code → hence no chances of relapse (eg) CAR-T cell cancer therapy.
- ③ more permanence of treatment affect.

- (4) ~~no~~ less chances of mother-child transmission → put an effective check on congenital diseases.
- (5) less chances of septic shock

Drawbacks of gene therapy.

- (1) costly procedure
- (2) still in experimental stage.
- (3) less awareness
- (4) ethical issues → privacy of patients' genetic information

However, with adequate adoption of technology tinkered with compassion, gene therapy can serve as a boon to palliative care.

Q.16) Why are countries keen on developing their own space stations? What obstacles do they face in the process, and how can these be overcome? (15 marks, 250 words)

राष्ट्र अपने स्वयं के अंतरिक्ष स्टेशन विकसित करने के लिए क्यों उत्सुक हैं? इस प्रक्रिया में उन्हें किन बाधाओं का सामना करना पड़ता है, और इनसे कैसे निपटा जा सकता है? (15 अंक, 250 शब्द)

India plans to construct its indigenous Bharat Antariksh station (BAS), a 20 tonne space module by 2028.

Reasons for having own space station

① Leverage supremacy in space research — such as microgravity studies

② Send human space missions effectively (eg: Yaganyaan planned)

③ Keep research secrets safe → no data sharing / technology transfer obligation.

④ Exploze critical minerals in space and bring them to

home country.

- ⑤ In line with emerging needs of semiconductor chips, EV etc.
- ⑥ Integrate Deep Tech (AI etc) with space research without fear of data breach / cyber attacks.

obstacles faced in the process.

- ① Lack of Holistic technical expertise about space.
- ② Fund crunch (eg: India spent Rs 500cr for one Axiom 4 astronaut training).
- ③ Over-crowding of space
- ④ Lack of international regulation and laws.
- ⑤ Issue of space debris (Kessler syndrome) and space waste management.

- ⑥ Lack comprehensive crisis and evacuation protocols.
- ⑧ Developing countries also lack strong capacity building infrastructure for astronauts.

ways to overcome these.

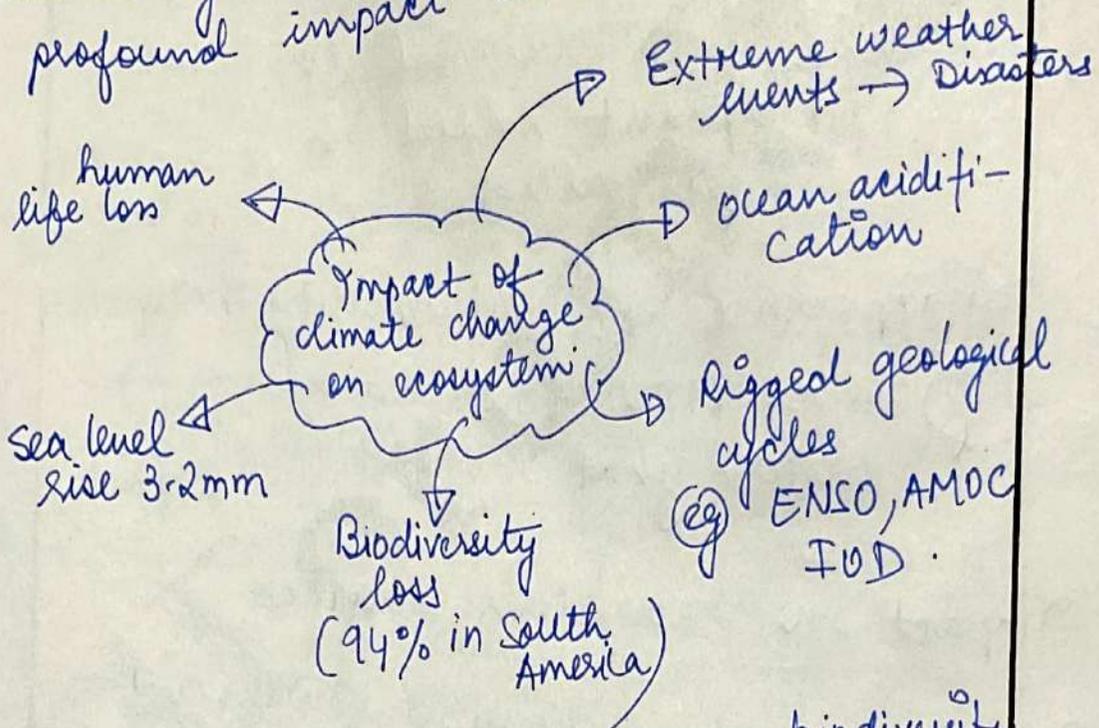
- ① Enough of space simulations mock drills.
- ② Bring private sector for PPP in space station.
- ③ Global Treaties on "space" use
Docking Experiment (IPAD EX)
- ④ Promotion to space R & D
- ⑤

Thus as countries flex their space strength, India must harness URD's potential to become a global space power.

Q.17) Climate change is causing profound alterations in ecosystems, triggering cascading impacts on biodiversity, ecosystem services, and human livelihoods, which demands integrated approaches to conservation and climate adaptation. Analyse. (15 marks, 250 words)

जलवायु परिवर्तन पारिस्थितिकी तंत्र में गंभीर परिवर्तन ला रहा है, जिससे जैव विविधता, पारिस्थितिकी तंत्र सेवाओं और मानव आजीविका पर व्यापक प्रभाव पड़ रहा है, जिसके लिए संरक्षण और जलवायु अनुकूलन के लिए एकीकृत दृष्टिकोण की आवश्यकता है। विश्लेषण करें। (15 अंक, 250 शब्द)

2024 as recorded temperature 1.6°C above pre industrial levels (above IPCC 1.5°C target) indicating climate change and its profound impact across ecosystems.



Impact of climate change on biodiversity

- ① Bleaching of coral reefs due to ocean acidification.
- ② pollinators have reduced by 68% due to climate change (WWF)

- ③ Species extinction
(eg) Dugong
- ④ Rise of invasive alien species due to altered habitats
(eg) Prosopis Juliflora
- ⑤ Habitat destruction (eg) Snow leopards
- ⑥ Increased man-animal conflict
(elephant killed 36 in 2023-24
Tigers killed 82 in 2024)
- ⑦ Disappearance of biodiversity hotspots.
(eg) since 1950, 60% reduction of western Ghats hotspot (Gadgil report)

Impact on ecosystem services

- ① Disrupt biogeochemical nutrient cycles like carbon, nitrogen etc.
- ② Disrupt regulation of water cycle
(eg: Unexpected glacial melt)
- ③ Decreased availability of minor forest produce
- ④ Increased pest attack (eg: locust swarms in Horn of Africa)

Impact on human livelihood

- ① Jeopardize agriculture → affect farmers' income
- ② Death of fisheries and rise of sea level → affect coastal communities.
- ③ Cyclones etc → damage to life and property.
(eg: Cyclone Amphan \$ 14bn loss)

Need for integrated approach to conservation & climate adaptation

- ① Integrated farming system + climate resilient agriculture.
- ② Capacity building of people
- ③ Climate safe practices like "LiFe", circular economy
- ④ promote Bio manufacturing (eg: BioE³ policy)
- ⑤ CDRI ⑥ Renewable energy (eg) OSOWOLK.

Thus by adopting climate resilient practices, India can achieve inter-generational equity along with sustainable growth.

Feedback
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TOTAL MARKS			

Q.18) Often referred to as the 'cradle of civilization' and 'growth engines', urban areas are increasingly experiencing various natural and man-made disasters. Discuss in the Indian context. Also, suggest suitable mitigation and management strategies. (15 marks, 250 words)

अक्सर 'सभ्यता का पालना' और 'विकास इंजन' कहे जाने वाले शहरी क्षेत्रों में विभिन्न प्राकृतिक और मानव निर्मित आपदाएँ बढ़ रही हैं। भारतीय संदर्भ में चर्चा करें। साथ ही, उपयुक्त शमन और प्रबंधन रणनीतियाँ सुझाएँ। (15 अंक, 250 शब्द)

NITI Aayog say by 2030, 40% of India's population will live in cities. Union Budget 2025-26 too focuses cities as growth hubs

Natural Disasters

- ① Earthquake
- ② Cyclone

(eg) Chennai 2023

Man Made Disasters

- ① Flash Flood & Urban flooding
- ② Heat Island effect
- ③ Fire accidents
- ④ Industrial disasters
(eg) Toothkundi SO₂ leak
Vedanta
- ⑤ Stampede

EQ → (eg) Bhuj earth quake.

Cyclone → (eg) cyclone Amphan caused \$ 14 bn loss.
cyclone Biparjoy caused \$ 2.5 bn loss.

Urban flooding → due to inadequate storm water drainage
Destruction of wetlands.
(eg) Chennai floods (2023)

Heatwaves → concretization of cities.
(eg) Rajasthan recorded 48°C in April-May 2024.

Stampede → over-crowding
lack of adequate emergency exits.
(eg) 18 killed in Chinnamaswamy stadium (IPL match 2025)

Industrial Disaster → (eg) Toothkundi SO₂ leak from Vedanta plant.

Mitigation and Management strategies.

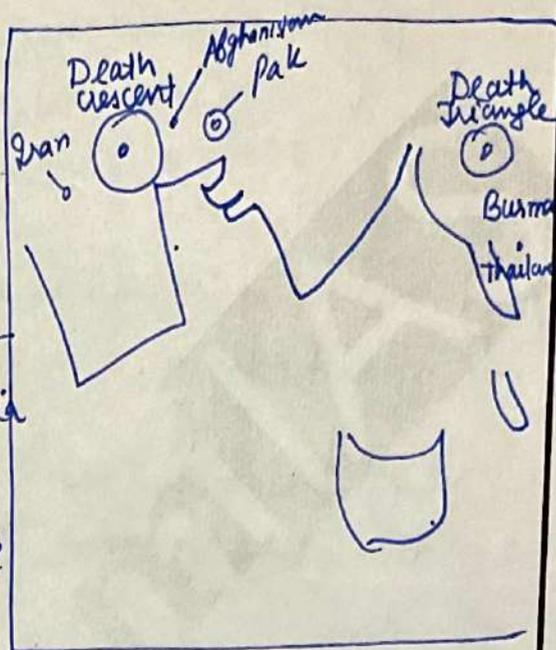
- ① Understand Disaster Risk
 - (a) Hazard zonation mapping
 - (b) Risk vulnerability assessment.
- ② structural measures
 - (a) ^{Seismic} Retrofit buildings.
 - (b) Create biowells, retention pools (Flash flood, Urban flood)
 - (c) ~~City management~~
Create Bioshields (eg: Mikawaki method)
- ③ Non-structural
Urban Disaster Management plans
- ④ Capacity building
 - (1) mock drill
 - Aapada Mitra
- ⑤ interagency collab.
NDMA + SDMA + DDMA
- ⑥ international cooperation (eg) CDRI.

thus, we can make our cities disaster resilient for a sustainable future.

Q.19) How does India's geographical location heighten its vulnerability to drug trafficking? Also, analyze various internal security risks linked to drug trafficking. (15 marks, 250 words)

भारत की भौगोलिक स्थिति किस प्रकार मादक पदार्थों की तस्करी के प्रति इसकी संवेदनशीलता को बढ़ाती है? साथ ही, मादक पदार्थों की तस्करी से जुड़े विभिन्न आंतरिक सुरक्षा जोखिमों का विश्लेषण करें। (15 अंक, 250 शब्द)

India's proximity to Death Crescent (Pak + Iran + Afghanistan) and Death Triangle (Burma + Thailand + Cambodia & Laos) heighten its vulnerability to drug trafficking.



Various internal security risks related to drug trafficking

- ① Proliferation of organized crimes.
(eg) Kidnapping, political assassination by D-company in Bombay.
- ② Complement with arms smuggling
(eg) Myanmar supplying arms to Kuki militias in Manipur. (Indium satellite phones discovered)

- ③ leads to human trafficking for organ and sex trade.
(eg) sex workers trafficked from Nepal to G B Road, Delhi
- ④ Money laundering and Terror financing.
(eg) Taliban using Heroin trade money to train militias
- ⑤ Indoctrination propaganda through social media
(eg) ISIS using Telegram for recruitment
- ⑥ Rise of cyber warfare through Deep web
- ⑦ Fuelling of Naxalism & NE insurgency through drug trade

⑧ Problem of substance abuse/addiction among youth.
 (eg) Punjab's rampant drug abuse.

⑨ Rise of non-state actors/drug trade → creating parallel economy

Thus drug trafficking has myriad security dilemmas for the country. NCB needs to track down heavily on drug trade to achieve goals of Nasha Muket Bharat and Surakshit Bharat.

Feedback

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TOTAL MARKS			

Q.20) The increasing frequency and sophistication of cyberattacks pose a significant threat to national security. Discuss the major challenges in ensuring cybersecurity in the country and enumerate the measures taken by the government in this regard. (15 marks, 250 words)

साइबर हमलों की बढ़ती आवृत्ति और परिष्कार राष्ट्रीय सुरक्षा के लिए एक बड़ा खतरा है। देश में साइबर सुरक्षा सुनिश्चित करने में प्रमुख चुनौतियों पर चर्चा करें और इस संबंध में सरकार द्वारा उठाए गए उपायों का उल्लेख करें। (15 अंक, 250 शब्द)

Post operation Sindoor, numerous DDOS attacks were launched against Indian websites. This gives a reality check on increased instances of cyberattacks.

Cyberattacks as threat to national security : —

- ① Affect critical infrastructure
(eg) attack on Kudankulam nuclear power plant.
- ② Hacking of important servers
(eg) AIIMS server attack.
- ③ stealing crucial information and secrets
(eg) Pegasus attack on top officials smartphones.
- ④ Compromise/Neutralize second strike capabilities.

⑤ Indoctrination / radicalization →
proliferation of home grown terrorism

Challenges in ensuring cyber security

- ① Anonymous and highly de-centralized
- ② Complex layering of source of attack.
(eg) spoofing, fake domain names.
- ③ low cost (hardly ₹ 30,000 capex to launch a phishing attack — CERT In)
- ④ Difficult to track in dark web.
- ⑤ Beyond jurisdiction → transboundary in nature

Measures taken by government in this regard

- ① National Cyber security policy 2018.
- ② Cyber Warrior
- ③ Cyber Surakshit Bharat Initiative
- ④ Cyber helpline - 1903
- ⑤ Cyber volunteers to flog off unlawful content.

State govt → (eg) Cyber dome (Kerala)

Thus government with the help of Tech companies and civil society should strive to create a cyber safe-Bharat for all. (Gulshan Rai Mehta Committee)

Feedback	
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