

TEST CODE 8 1 3 4 1 1

Time Allowed : Three Hours  
समय : तीन घंटे

ForumIAS

Maximum Marks : 250  
अधिकतम अंक : 250

## GENERAL STUDIES / सामान्य अध्ययन

Name Of Candidate परीक्षार्थी का नाम	Kanshuk Aggarwal		
Roll No./अनुक्रमांक	Medium/माध्यम	English <input checked="" type="checkbox"/>	Hindi <input type="checkbox"/>
Center Code/परीक्षा केंद्र	Date/दिनांक	Online	

\*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 प्राप्तक	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।		
1			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।		
2			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।		
3			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 (क्यूआर) पुस्तिका के कवर पर स्पष्ट रूप से लिखा जाना चाहिए।		
4			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।		
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Total Marks/कुल अंक :			Mode Of Examination/ परीक्षा की विधि :	Online/ऑनलाइन <input type="checkbox"/> Offline/ऑफलाइन <input type="checkbox"/>	
*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 समावेश, पृष्ठोपार्थ, तथ्यों और आंकड़ों या समग्र रूप किसी अन्य विषय वस्तु, जो मूल्यांकन कर्ता को आपकी कॉपी में पसंद आने के आधार पर (लेकिन इन्हें तक सीमित नहीं) पर दिए गए अंक हैं।			For Office Use Only / केवल कार्यालय प्रयोग हेतु		
			ECN CODE/ ईसीएन कोड :	EG/ईजी :	Evaluation Date/ मूल्यांकन तिथि :
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Feedbacks are expected to incorporate suggestions from the feedback provided in the answers. Discussion class  
The tests are also available online in your portal to aid in your preparation. Further, students are requested to see the  
copies of the tests and learn from them. You can also discuss your copy with a Mentor and discover ways and means  
improve your answers, or if you have any issues with this test / copy. Ask specific questions, to get specific answers.

### EXAMINER'S REMARKS

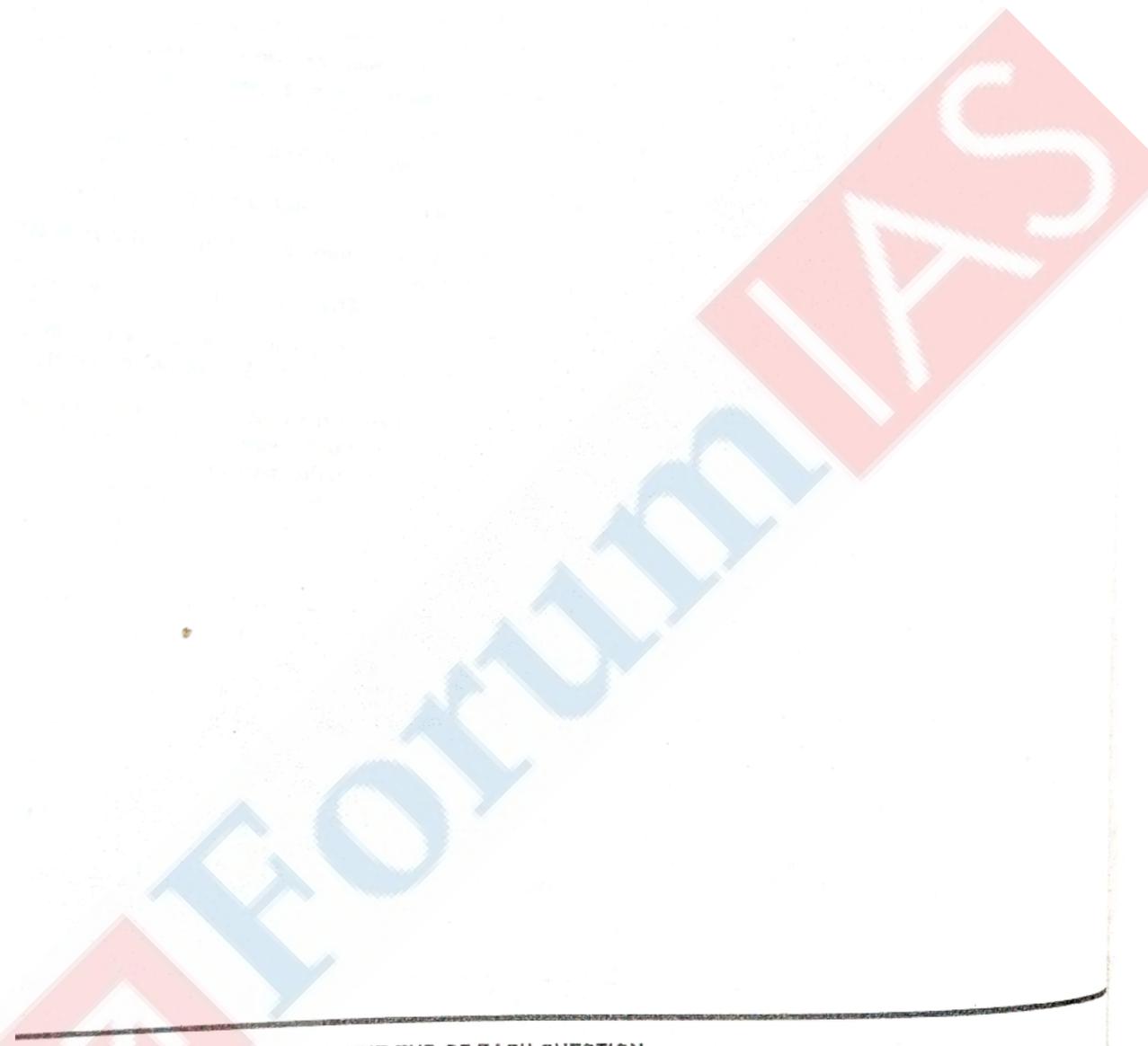
#### READ THE FEEDBACK SECTION AT THE END OF EACH QUESTION

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

**Content Density & Value Addition.** Examiner will evaluate the quality and quantity of your content in the answer. In the same way  
do you (a) written what is asked (b) gone beyond what is asked (c) enriched answers through combination of ( but not all) suggestions  
charts, diagrams, facts and figures, data etc. This affects objective components of assessment.

**Structure & Flow** = Whether you have structured your answer properly or not. Whether the answer has been broken into parts and  
been addressed appropriately or not. Whether the flow of the answer is maintained. Affects both subjective and objective components

**How your answer performs on the criteria of presentation, ease of read, clarity and apparent effort in writing the answer.** These are the  
components of assessment.



Q.2) Why does India need to transition from a 'build to print' to a 'build to design' model in manufacturing? What steps has been taken by the government in this regard? (10 marks, 150 words)

भारत को विनिर्माण में 'अनुसारी निर्माण' (Build to Print) से 'डिजाइन आधारित निर्माण' (Build to Design) मॉडल की ओर संक्रमण की आवश्यकता क्यों है? इस संदर्भ में सरकार द्वारा कौन-से कदम उठाए गए हैं? (10 अंक, 150 शब्द)

Build to print is the concept where manufacturing happens domestically, while build to design is the concept where design and manufacturing both happen domestically.

Need for India to transition from 'build to print' to a 'build to design' model is -

- 1) Reduced dependence on foreign firms
- 2) Strengthens Make in India.
- 3) Tailored goods for India can be made.
- 4) Reduced imports, and improves current account deficit.
- 5) New way for making India as design capital of world.
- 6) Reduces the cost of product, enhancing competitiveness.
- 7) Enhances employability, reducing brain drain.

3) Phillip to Indian economy by saving it from global macroeconomic uncertainties.

Steps taken by government in this regard -

- 1) Design linked incentive scheme for semiconductors, display units.
- 2) Atal Tinkering labs - to invoke ~~des~~ original thinking, crucial for design.
- 3) Start up India mission - to foster innovation.
- 4) PM Mudra Yojana - to enable women, vulnerables to start their entrepreneurship.
- 5) Suijan portal - to allow Indian manufacturers a market to sell.
- 6) Defence procurement procedure, 2020 - revamped to prioritize Indian designed equipments.

Thus, it is crucial for India to tap the innovation potential (~~as~~ global innovation index) to ~~ughes~~ ~~in~~ ~~benefit~~ ~~from~~ ~~it~~.

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Here G is Good	
Average is Good	
Poor.	
TOTAL MARKS	

Q.3) Explain the concept of a nutrition-sensitive food system and suggest strategies to achieve it in the country. (10 marks, 150 words)

पोषण-संवेदनशील खाद्य प्रणाली की अवधारणा को समझाइए तथा देश में इसे प्राप्त करने के लिए रणनीति सुझाइए। (10 अंक, 150 शब्द)

Recently launched Poshan 2.0 brings a focus upon the nutrient composition of meals.

Concept of nutrition sensitive food system-

- 1) Has coverage of enough vitamins of Vitamin A, D, E, K (water soluble).
- 2) Has enough protein requirement.
- 3) Has Iron enough to prevent anaemia (Around 50% female 14-49 years are anaemic)
- 4) Has requisite calcium and other minerals to prevent stunting (around 25% NFHS)
- 5) Food fortification allows to add nutrients (eg rice fortified with iron).
- 6) A balanced diet necessary for 360° development of cognition and physical health.

Strategies to achieve nutrition sensitive food system in country are -

- 1) Food fortification - eg adding zinc in wheat
- 2) GM crops - eg Golden rice
- 3) Spreading awareness of necessity of nutrition in food.
- 4) Strengthening food processing for dairy products to enhance its shelf life.
- 5) Availability of fortified food at PDS shops.
- 6) Encouraging farmers to grow pulses in field by rationalizing MSP.
- 7) ~~Red~~ Special emphasis on female via food packets.

Thus, a nutrition sensitive food system will help in achieving the optimum potential of humans and SDG 2.

Q.5) Rare earths are not just elements; they are foundational inputs that act like 'seeds of technology'.  
Elaborate. (10 marks, 150 words)

दुर्लभ मृदा तत्व (Rare Earths) केवल रासायनिक तत्व नहीं हैं; ये प्रौद्योगिकी के 'बीज-तुल्य' मूलभूत निवेश हैं। सविस्तर वर्णन कीजिए। (10 अंक, 150 शब्द)

Rare earth elements are a group of 30 elements found in Earth's crust in form of oxides.  
eg Scandium, Lanthanides.

Rare earth elements act like 'seeds of technology' because -

- 1) Defence - Titanium used to make high strength body of ~~se~~ planes, tanks.
- 2) Electronics - Foundation for magnetic properties
- 3) Display units - Needed because of photoluminescence.
- 4) Motor - Magnetic properties enable them to be suitable for electromagnets.
- 5) Clean energy transition - eg wind turbine.

- 6) Aviation industry - low weight and high strength is needed.
- 7) Steel making - to making steel with superior tribological properties.
- 8) Help in technology spin off.
- 9) Space sector - to make heat resistant shields.
- 10) Nuclear energy - <sup>some</sup> lanthanides display radioactive behaviour.

Hence, to capitalize upon the extraction and processing in order to prevent weaponisation of supply chain by China, KABIL, Ministry of earth science need to act in unison with ~~mult~~ multilaterals like QUAD.

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Here G: Average Poor.
TOTAL MARKS

Q.6) Why retrofitting Electrostatic Precipitators (ESPs) in Indian thermal power plants is a more viable and effective option compared to the installation of flue gas desulfurization (FGD) systems?

(10 marks, 150 words)

भारतीय तापीय विद्युत संयंत्रों में फ्लू गैस डिस्ल्फ्युराइजेशन (FGD) प्रणालियाँ लगाने के बजाय विद्युत-अवक्षेपकों (ESPs) का पुनर्संयोजन क्यों अधिक व्यवहार्य और कारगर विकल्प है? (10 अंक, 150 शब्द)

Electrostatic precipitators are instruments deployed in chimneys to electrically trap the solid particles.

Flue gas desulfurization is a technique to remove sulphur oxides from the flue gas.

Retrofitting ESP is better than FGD because -

- 1) Cost effectiveness of ESP than FGD.
- 2) The technology of FGD is still nascent.
- 3) Indian coal is high in ash and has less sulphur, thus making ESP a better choice.
- 4) Less labour requirement in case of ESP.

5) The prime pollution problem in India is Particulate matter which can be solved by ESP.

6) Sulphur can also be removed by washing coal

7) less costly to run ESP as FGD require frequent replacements.

8) It takes less time to fit ESP than FGD modules

9) The current stack design is suitable for ESP and FGD require a complete overhaul.

10) Technical know how of ESP is far greater than FGD, making easy availability of technicians.

Thus, to aim for clean India, ESP along with shift to greener sources is a sine qua non to achieve SDG 7.

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Q.7) 'The Environmental Impact Assessment (EIA) regime in India remains weak and is often reduced to a procedural formality.' In light of this statement, examine the key challenges in EIA implementation and suggest reforms. (10 marks, 150 words)

'भारत में पर्यावरण प्रभाव आकलन (EIA) व्यवस्था कमजोर बनी हुई है और अक्सर इसे प्रक्रियात्मक औपचारिकता तक सीमित कर दिया जाता है।' इस कथन के आलोक में, EIA कार्यान्वयन में प्रमुख चुनौतियों का परीक्षण करें और सुधारात्मक उपाय सुझाएं। (10 अंक, 150 शब्द)

EIA is the process of analysing the detrimental impact upon environment by a project.

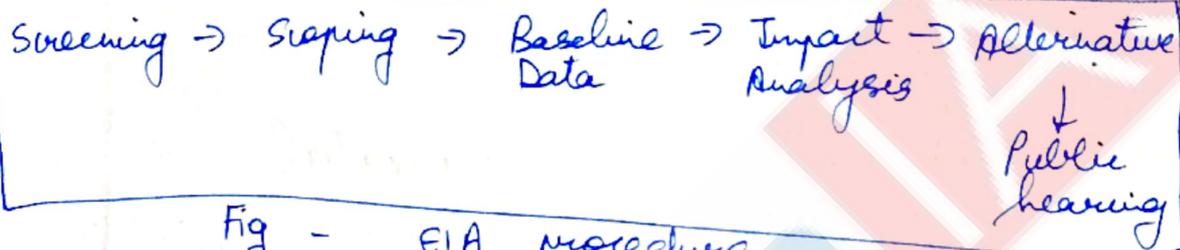


Fig - EIA procedure.

EIA is weak and a procedural formality as highlighted from

- 1) Navroji nagar EIA - a copy paste of another document
- 2) Neutrino observatory - public hearing happened after 9 years of screening.

Key Challenges in EIA implementation -

- 1) Lack of original analysis.
- 2) Public hearing is delayed
- 3) Reports involve plagiarism.

4) Often noticed that all externalities not taken into account.

5) Frequent changes in screening criteria. eg small sand mining projects are kept outside of EIA.

### Reforms for EIA implementation -

1) Using technologies like Geospatial portal to strengthen the impact analysis.

2) Public hearing to be streamlined and held in time.

3) Use of vernacular in public hearing.

4) Separate department for EIA on lines of CPCB, SPCB.

5) Strict screening procedure.

Thus, ~~best~~ eco friendly development should be the priority and aim should be to minimize the environmental harm.

Plastic pollution is emerging as a serious environmental threat in India. Discuss the various mitigation measures to address this problem and also the government's initiatives in this regard.

(10 marks, 150 words)

एक प्रदूषण भारत में एक गंभीर पर्यावरणीय खतरे के रूप में उभर रहा है। इस समस्या से निपटने के लिए विभिन्न शमन में और इस संबंध में सरकार की पहलों पर चर्चा करें। (10 अंक, 150 शब्द)

per CPCB, more than 30 lakh tonnes of plastic waste is generated annually.

for time to  $\leftarrow$  Plastic pollution as an environmental threat  $\rightarrow$  Microplastics and Bioaccumulation.

↓  
chokes the drain, cattle health

mitigation measures to address plastic pollution -

Reusing plastic bags

Gradual ban on ~~low~~ multi layered plastic

Recycling centres to be set up.

Maintaining of waste collection data

Speeding up research to find

substitute for plastic (eg bioplastics)

- 6) Japan's case study - deposition centres for water bottles in every neighbourhood.
- 7) Waste segregation at source.

Government's initiatives in this regard are

- 1) Extended producer responsibility rules extended to plastic waste generators
- 2) Ban on single use plastic
- 3) Issuing certificates for collection bank of plastics (2 lakh certificates issued)
- 4) Using plastics in making roads
- 5) Waste to energy plants incinerating non recyclable plastics to generate electricity
- 6) Campaigns to sensitize people about mindful use of plastics.

Hence, clean India can be envisioned only with the sustainable management of plastic waste.

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Q.9) Amid evolving threats, there is a need to blend private sector capabilities with India's current internal security architecture. In this context, elaborate on the ways in which the private sector can contribute to strengthening internal security. (10 marks, 150 words)

उभरते खतरों के बीच, भारत की मौजूदा आंतरिक सुरक्षा संरचना के साथ निजी क्षेत्र की क्षमताओं को जोड़ने की आवश्यकता है। इस संदर्भ में, उन तरीकों पर विस्तार से चर्चा करें जिनसे निजी क्षेत्र आंतरिक सुरक्षा को सशक्त करने में योगदान दे सकता है। (10 अंक, 150 शब्द)

The rise of cybersecurity threats like AI highlights the need to blend private sector capabilities with India's internal security architecture.

### Need of private sector

- > Changing dynamics of threats (from conventional to modern)
- > Technology is at the fulcrum of present day threats
- > ~~Now~~ The adversaries are often led by private sector too.

To aid in 2 front war.  
Ways in which private sector can contribute to strengthen internal security

- > Can build filtering mechanism on social media to prevent spread of radical speech etc.

- 2) Startups can supplement space domain strength of India (eg Agnikood)
- 3) Can spur innovation in making arms etc (eg ATAGOs)
- 4) Bring in efficiency, nudging HAL, DRDO to compete at level playing field.
- 5) Private sector can ~~be~~ strengthen their defensive capacities in wake of cyberattacks of private banks, hospitals.
- 6) Private sector can channelize CSR for socio economic development in distant areas (eg Left wing extremist areas)
- 7) Provide ~~job~~ pooled technology to ~~strengthen~~
- 8) Open industries in areas hit by militancy (eg Kashmir).

Hence, ~~per~~ to deal with evolving internal security challenges a collective effort is required.

Q.10) 'Radicalisation in Jammu and Kashmir is driven as much by socio-economic factors as by external influences.' Discuss how education and youth engagement can play a role in countering radicalisation in J&K. 10M. (10 marks, 150 words)

जम्मू और कश्मीर में कट्टरपंथ सामाजिक-आर्थिक कारकों के साथ-साथ बाहरी प्रभावों से भी प्रेरित है। चर्चा करें कि शिक्षा और युवा भागीदारी किस प्रकार जम्मू और कश्मीर में कट्टरपंथ का मुकाबला करने में भूमिका निभा सकती है। (10 अंक, 150 शब्द)

Rise of overground workers, lone wolf attacks highlights the rise in radicalisation in Jammu and Kashmir.

Socio economic factors driving radicalisation -

- 1) Communalism
- 2) Social media narratives
- 3) Craves for glamour
- 4) Unemployment.

External influences driving radicalisation -

- 1) State sponsored terrorism by Pakistan
- 2) Terrorist organisation eg JeM, LeT.

Education can counter radicalisation by -

- 1) Providing them skills for vocation, prevent them moving towards radicalism
- 2) Prevent them from being going to radical ~~educat~~ ~~educat~~ instruction places.

- 3) Education will let youth know the nefarious intention of radicalizers.
- 4) Education will help in development of patriotism towards India.
- 5) It will allow youth to objectively gauge the situation and prevent them from falling to trap.

Youth engagement can help in following manner

- 1) Youth become eyes and ears for catching overground workers.
- 2) It prevent youth to become radicalized, by instilling hope in them.
- 3) Reduces the youth's perceived glamour with gun.
- 4) United efforts of youth and administration can help eradicate radicalism.

Thus, Tejwan Reddy committee's recommendation needs to be taken up to eradicate militancy in J&K.

Q.11) Outlining the key characteristics of the care economy, discuss how India can better integrate the value of unpaid and underpaid care work into its economic framework. (15 marks, 250 words)

देखभाल अर्थव्यवस्था (केयर इकोनॉमी) की प्रमुख विशेषताओं को रेखांकित करते हुए चर्चा कीजिए कि भारत किस प्रकार अवैतनिक और अल्प वेतनिक देखभाल कार्य के मूल्य को अपने आर्थिक ढांचे में बेहतर ढंग से एकीकृत कर सकता है। (15 अंक, 250 शब्द)

India's female labour force participation rate stands at 43%, as per periodic labour force survey 2024.

Care economy is the work done especially by females predominantly the household chores.

Key characteristics of care economy -

- > Unaccounted work
- > Work without time limits
- > Unrecognized
- > Seen as duty and not work
- > Taken for granted
- > No holidays.

~~etc~~

India can integrate the value of unpaid and underpaid care work into its economic framework by -

- 1) By accounting the unpaid work in the GDP, as suggested by IMF.
- 2) By incorporating care work as work, for purpose of periodic labour force survey (Economic survey).
- 3) May bring a legislation to classify care work as employment.
- 4) Registering the domestic helpers on e-shram portal for government schemes.
- 5) To classify home also as workplace.
- 6) Streamlining labour laws
- 7) The questionnaire prepared for surveys needs to be broadened (Economic Survey).

Thus, the integration can help in better inclusion leading to inclusive growth.

Q.12) 'The rapid advancement of artificial intelligence (AI) presents both unprecedented opportunities and significant challenges for India's labour market.' Examine. Also suggest strategies to align AI adoption with inclusive and resilient labour market outcomes. (15 marks, 250 words)

'कृत्रिम बुद्धिमत्ता (AI) की तीव्र प्रगति भारत के श्रम बाजार के लिए अभूतपूर्व अवसर और महत्वपूर्ण चुनौतियाँ प्रस्तुत करती है।' परीक्षण करें। साथ ही, समावेशी और तन्व्यशील श्रम बाजार परिणामों के साथ AI अपनाने को संरक्षित करने की रणनीतियाँ भी सुझाएँ। (15 अंक, 250 शब्द)

As per IMF, AI has the potential to take away 8-10% jobs in developing countries.

Opportunities presented by AI for labour market

- 1) Creation of new jobs like ~~#~~ data scientist, analyst etc.
- 2) ~~New~~ Enhance jobs in electronics sector, energy sector (AI is energy intensive).
- 3) Technology spin off creates new jobs, no industrial revolution has led to job loss.
- 4) ~~Q~~ 68% working age population (UNFPA), is best suited to capitalize upon the AI market
- 5) Youthful population (28 years median age) can best get skilled in new age technology.

In light of PM Kaushal Vikas Yojana 4.0,  
youth is aligned for AI market.

However certain challenges are also posed  
by AI.

Net job loss, as highlighted by IMF.

Destruction of low skilled jobs.  
eg Teller in bank, coding etc.

Bring asymmetry in income of  
people meticulous in AI and people with  
traditional skill set.

Disruption to the present established  
labour market by AI induced automation

Affect women more, ~~as~~ because of  
intersectional inequality in learning  
skills

Affect employees of higher age because  
of their less awareness with AI.

> May shift jobs to developed countries  
because of their IT infrastructure and  
skill set.

## Strategies to align AI adoption with inclusive and resilient labour market outcomes -

- 1) Reskilling the labour force with new age skills
- 2) Incorporating AI in school curriculum
- 3) Industry - universities linkage to impart necessary skill sets to the graduates.
- 4) Skilling programmes, workshops by industries to upskill their labour force.
- 5) Modules can be deployed online and issuing certificate thereafter (eg Swayam portal)
- 6) Leveraging local government to deploy AI learning at the grassroots level.

Hence, India being a bright spot need to act swiftly to not miss the AI train in the evolving global scenario.

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TOTAL  
MARKS

Q.13) Why does India's agricultural export performance remain weak despite high production levels? What measures would you suggest to improve agri-export competitiveness? (15 marks, 250 words)

उच्च उत्पादन स्तर के बावजूद भारत का कृषि निर्यात प्रदर्शन कमजोर क्यों है? कृषि-निर्यात प्रतिस्पर्धात्मकता में सुधार के लिए आप क्या उपाय सुझाएंगे? (15 अंक, 250 शब्द)

India's agri exports stood around 45 bn \$ last fiscal, while it produced more than 330 mn tonnes of grains.

India's agri production levels -

> Amongst top 3 in production of rice, wheat, sugarcane, pulses, millets.

> Top 5 in horticulture, oilseeds, etc.

Reason for weak export despite high production levels -

> Low farm size (89% small and marginal) leads to subsistence farming.

> Huge domestic market.

> Low surplus because of low productivity due to poor mechanization etc.

> Perishable nature of horticulture,

- less cold chain infrastructure  
(90,000 cr ₹/yr loss as per NITI aayog).
- ⇒ Sanitary and phytosanitary issues from other countries. eg European non trade barriers.
  - 6) Issue of pesticides (eg in rice endosulfan) due to lack of awareness of farmers.
  - 7) Tedious certification process from APEDA for organic food.
  - 8) Lack of private sector investment in supply chain (12% , economy survey)
  - 9) Low food processing, which reduces the export prospects.
  - 10) Lack of real time price to farmers in export market
  - 11) Export control measures hinders the export prospect.
  - 12) Essential commodities act reduces private participation in cold chain infrastructure.

steps to improve agri export competitiveness  
Trade agreements with favourable phytosanitary  
measures

strengthen the district as export hubs,  
aiding farmers' collective (eg FPO), to  
achieve better economies of scale.

strengthen contract farming

develop the cold chain infrastructure.

strengthen the panchayati raj institutions  
to spread awareness amongst farmers for  
exports.

liberalising the export restrictions,  
in terms of minimum export price

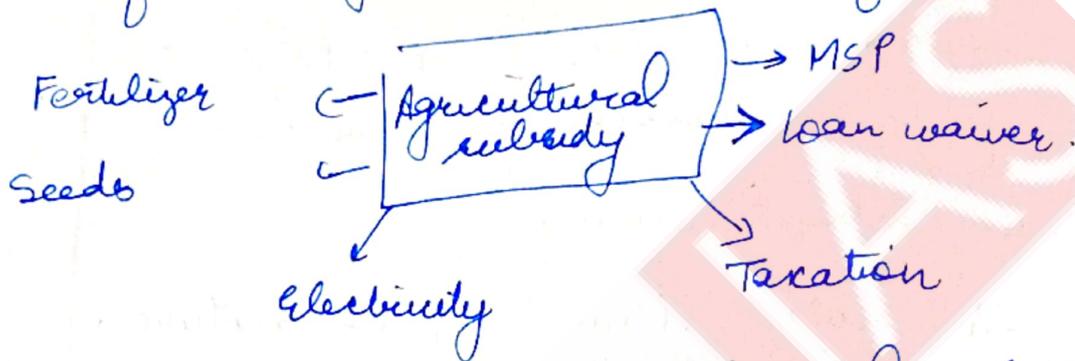
liberalise the essential commodities  
list.

Free export of agri products is a  
prerequisite in achieving farmers'  
welfare.

Q.14) "The agricultural subsidy regime in the country needs reforms to address the distortions it causes." Comment. (15 marks, 250 words)

देश में कृषि सब्सिडी व्यवस्था में सुधार की आवश्यकता है ताकि इससे होने वाली विकृतियों को दूर किया जा सके। टिप्पणी करें। (15 अंक, 250 शब्द)

Agricultural subsidy forms the highest part of subsidy to the tune of 4% GDP.



Distortions caused by agricultural subsidy

- 1) Fertilizer being diverted for other uses (eg timber factory).
- 2) Urea overuse has led to unbalanced N:P:K ratio (7:2:4:1), ideal is 4:2:1
- 3) Lowering ground water level (NASA - 0.2m/yr is depletion)
- 4) Water guzzling crops being planted (eg sugarcane in Vidarbha).
- 5) Dominance of wheat - rice system

loan waivers reduces the productivity of agriculture (SBI research)

cross subsidization of electricity leads to losses to DISCOMs.

subsidies barely reach the landless farmers, sharecroppers, oral lessees etc.

India has become virtually a water importing country, utilises 25% of world's groundwater (Economic survey)

subsidies are regressive, favours more to the rich (Economic Survey).

there can be following reforms to gate the distortions -

Focus on capital investments rather than non productive subsidies (eg subsidy on mechanization rather than electricity)

privatization of submersible pumps to low ~~farmers~~ DISCOMs to get to recover.

- 3) Separation of feeders for the electricity.
- 4) Forging farmers collective to reap benefit of economies of scale, reducing support over government.
- 5) Rationalizing subsidies in favour of small farmers and reducing for large farmers.
- 6) MSP to be extended in better way for millets, pulses, oilseeds.
- 7) Fertilizer subsidy to be solely based on nutrient based subsidy.
- 8) Loan waivers to be limited to period of famine etc.
- 9) Limit the fertilizer subsidy on basis of land area.

Hence, monumental changes are needed to revamp the sector. As MS Swaminathan said, "future belong to those with grains and guns" highlights the importance of agriculture.

Q.15) How can biomanufacturing transform today's consumptive manufacturing paradigm to the one based on regenerative principles? Also discuss how BioE3 Policy (Biotechnology for Economy, Environment, and Employment) aims to foster biomanufacturing in the country. (15 marks, 250 words)

बायोमैनुफैक्चरिंग आज के उपभोगात्मक विनिर्माण प्रतिमान को पुनर्योजी सिद्धांतों पर आधारित प्रतिमान में कैसे बदल सकता है? यह भी चर्चा करें कि बायोई3 (BioE3) नीति (अर्थव्यवस्था, पर्यावरण और रोजगार के लिए जैव प्रौद्योगिकी) का उद्देश्य देश में बायोमैनुफैक्चरिंग को बढ़ावा देना है। (15 अंक, 250 शब्द)

Biomanufacturing is the production of goods from biological specimen.

Biomanufacturing transforms the current paradigm in the following manner -

- 1) Reduces negative externality on the environment.
- 2) Reduces the carbon emission.
- 3) 360 closed chain, where the product at end of life stage can again be regenerated.
- 4) Reduces the need to mine for new products.
- 5) Less polluting than the traditional manufacturing processes.
- 6) It reduces the wasteful energy in terms of heat, sound etc.

- 7) Reduces the amount of fossil fuel used  
(power requirement less)
- 8) Can be located near the ~~market~~ market centre, because of low space requirement
- 9) Precision manufacturing, this reduces the waste.

Bio E3 policy fosters biomanufacturing in the country in following manner —

- 1) Encourages private players to come up & set up biomanufacturing plants.
- 2) Provides them with much needed financial
- 3) Channelize the narrative of ~~pro~~ people towards conservation
- 4) Promotes industry - academia linkage to develop skills accordingly.
- 5) Nudges the research domain to foster research on biomanufacturing

- Opens new avenues for employment.
- Strengthens export potential of India.
- Help in furthering the life movement.
- Improves the credentials of India at the global climate action table.
- Helps India get the climate finance -

Thus, Bio E3 policy is a progressive step to further India's goal of becoming carbon neutral by 2070.

**Feedb**  
(For OFFICE)

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Q.16) The future of digital innovation depends on self-reliant, domain-specific AI capabilities. In this context, bring out the key considerations in developing indigenous AI models and tools. Suggest measures to build an enabling ecosystem for AI innovation in India. What initiatives have been taken by the government in this regard? (15 marks, 250 words)

डिजिटल नवाचार का भविष्य आत्मनिर्भर, डोमेन-विशिष्ट AI क्षमताओं पर निर्भर करता है। इस संदर्भ में, स्वदेशी AI मॉडल और उपकरण विकसित करने में प्रमुख विचारों को स्पष्ट करें। भारत में AI नवाचार के लिए एक सक्षम पारितंत्र बनाने के उपाय सुझाएँ। इस संबंध में सरकार द्वारा क्या पहल की गई है? (15 अंक, 250 शब्द)

The rise of large language models has highlighted the ground breaking potential of AI.

Future depends on AI because -

- 1) It finds uses in multiple domains  
eg health, education.
- 2) Fear of AI singularity.
- 3) Job loss.
- 4) AI sovereignty.

Key considerations in developing indigenous AI models and tools -

- 1) Removing bias in AI datasets.
- 2) Respecting ~~sovereignty~~ privacy while collecting data (Article 21)
- 3) Data to remain within India.

- 4) AI to be used constructively, avoiding deepfakes.
- 5) Environment friendly AI model.
- 6) AI is accessible to all.

### Measures to build an enabling AI ecosystem for AI innovation in India -

- 1) Availability of GPUs/compute facility.
- 2) Availability of long time series data.
- 3) Indigenous large language model to be available.
- 4) AI skilled workforce.
- 5) Sovereignty of AI data and output.
- 6) Non-academic AI.
- 7) Fostering AI research in schools (eg Atal Tinkering Labs).
- 8) Reskilling the workforce.
- 9) Having semiconductor fabs to develop GPUs.

## Initiatives taken by government to build enabling ecosystem for AI innovation in India -

- 1) India AI mission
- 2) Supercomputing mission
- 3) ~~Good~~ design linked incentive scheme for semiconductors
- 4) Atal innovation mission
- 5) Courses on AI on MOOC, Swayam
- 6) NITI Aayog ~~good~~ report of AI in India
- 7) AI for all initiative
- 8) G20, AI working group

AI is the future. Need of hour is to clutch this moment as India usher in Amrit Kaal.

Q.17) Marine oil spills are a form of environmental disaster, with far-reaching consequences for biodiversity and coastal livelihoods; however, India's preparedness to prevent such incidents and mitigate their impact has significant gaps. Analyze.

(15 marks, 250 words)

समुद्री तेल रिसाव एक प्रकार की पर्यावरणीय आपदा है, जिसके जैव विविधता और तटीय आजीविका पर दूरगामी परिणाम होते हैं; हालाँकि, ऐसी घटनाओं को रोकने और उनके प्रभाव को कम करने के लिए भारत की तैयारियों में महत्वपूर्ण अंतराल हैं। विश्लेषण करें।

(15 अंक, 250 शब्द)

The recent Ennore oil spill in Chennai port highlighted the detrimental impact of oil spill.

Oil spill affect biodiversity -

- 1) Chokes the aquatic life from oxygen
- 2) Fishes get drowned in oil.
- 3) Oil act or interfere with nervous system of aquatic fauna.
- 4) Prevents sunlight reaching the bottom affect the aquatic flora (photo zone tempered)
- 5) Shelfered's law is violated - leads to death of marine life.

Oil spill affect coastal livelihoods

as -

- 1) The fishes are no longer edible, hence

non marketable

2) ~~The~~ It takes time for the productivity to regenerate, till then fishermen remain idle

3) Hampers tourism affecting tourism economy.

India's preparedness with regard to oil spill is as follows -

1) Notification of coastal regulation zone. Prevents infrastructure in sensitive zones.

2) Environmental impact assessment is carried out.

3) Technology like Biogrepper is available to remove the oil post oil spill.

4) Coast guard maintains constant vigil

5) ISRO provides necessary details for the extent of oil spill (NAVIC).

## Gaps in India's preparedness -

- 1) The disaster planning is lacking.
- 2) Preparedness is more of a post mortem i.e. cleaning and not preventive.
- 3) Lack of adequate manpower.
- 4) Lack of separate vessel department for oil spill.
- 5) Oil spill not treated in same manner as earthquake for purpose of disaster management act.
- 6) Lack of control over foreign flagged merchant vessels.
- 7) High turnaround time increases the vulnerability for oil spill.

Rigorous inspection of oil carriers.

Way Ahead

→ Amendment to Disaster Management Act

Hence, in era of blue economy and sustainable development, averbion of oil spills is a sine qua non.

Q.18) 'The United Nations has declared 2025 as the International Year of Glacier Preservation.' Bring out the ecological and socio-economic significance of glaciers. What are the key challenges in preserving them? What measures have been taken at national and international levels towards preservation of glaciers? (15 marks, 250 words)

संयुक्त राष्ट्र ने वर्ष 2025 को अंतर्राष्ट्रीय ग्लेशियर संरक्षण वर्ष घोषित किया है। ग्लेशियरों के पारिस्थितिक और सामाजिक-आर्थिक महत्व को उजागर करें। उन्हें संरक्षित करने में मुख्य चुनौतियाँ क्या हैं? ग्लेशियरों के संरक्षण के लिए राष्ट्रीय और अंतर्राष्ट्रीय स्तर पर क्या उपाय किए गए हैं? (15 अंक, 250 शब्द)

Glaciers are long rivers of ice  
eg Siachen glacier (75 km long)

Ecological significance of glaciers -

- 1) Home to fresh water resources.  
(Hindu Kush - III pole)
- 2) ~~Traps the~~ Maintains the heat budget of Earth.
- 3) Prevents warming of Earth by high albedo.
- 4) Home to biodiversity
- 5) Necessary to trap greenhouse gases  
(eg in permafrost)

Socio economic significance of glaciers -

- 1) Provides economic benefit due to tourism

- 2) Religious significance - Ganga
- 3) Source of rivers - Yamuna from Yamunotri
- 4) Binds people collectively around a common culture.
- 5) Source of hydropower due to perennial river of glaciers.

### Challenges in preserving them -

- 1) Global warming leading to rapid melting
- 2) Black carbon reduces albedo and contributes in melting them.
- 3) Mindless tourism affects the glacier ecosystem.
- 4) Development of border infrastructure hampers the loosens the soil/permafrost.
- 5) Glacial lake outburst flood.

### Measures at national level to preserve glaciers

- 1) Scientific assessment of glacial melting

- (by ministry of earth sciences)
- 2) Conversion to solar energy at the checkpoints from earlier used kerosene (eg at Siachen base camp)
  - 3) Construction of check walls to prevent glacial lake outburst flood.
  - 4) Environmental impact assessment for ~~the~~ alpine infrastructure

### Measures at international level -

- 1) Spreading global consciousness
- 2) Funds deployment to stabilize glaciers (eg Asian Development bank)
- 3) Assessments to track progress (eg IPCC VI assessment report)
- 4) Technology exchange and data sharing by satellites

Hence, glaciers form an important component of hydrosphere and should be preserved in the present  $12^{\text{th}}$  hotter earth.

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Q.19) What are the determinants of insurgency in the north-eastern region of India? What strategy should the Government of India, civil administration and security forces adopt to counter the threat in the affected areas? (15 marks, 250 words)

भारत के उत्तर-पूर्वी क्षेत्र में उग्रवाद के निर्धारक तत्व क्या हैं? प्रभावित क्षेत्रों में खतरे का मुकाबला करने के लिए भारत सरकार, नागरिक प्रशासन और सुरक्षा बलों को क्या रणनीति अपनानी चाहिए? (15 अंक, 250 शब्द)

Insurgency in North East have decreased by 70% in last decade as per ministry of home affairs.

Determinants of insurgency in North East India

- 1) Cross border movement - demand for greater Nagalim
- 2) Free movement regime, provides safe haven ~~passage~~ to terrorists.
- 3) Arms transfer by China
- 4) Ethnic conflict (eg Kuki and Meitei)
- 5) ~~Low~~ Autonomy for the group, low autonomy fuels insurgency. (eg Bodoland)
- 6) Tribal and non tribal conflicts
- 7) Low level of development fuels negative sentiments for states.

8) Illegal migrants <sup>are</sup> ~~are~~ radicalized  
(eg Rohingya)

9) Vested radical groups in neighbourhood  
(eg Bangladesh)

Strategy to be adopted by Government of India to counter threat

1) Diplomatic engagement with neighbouring countries

2) Demanding extradition of terrorist and operation like Susout

3) Monitoring borders, especially free movement regime

4) Devolving autonomy as per IT schedule

5) Implementing PESA in letter and spirit

6) Respecting local tradition in laws formulated

7) Development package

Strategy to be adopted by civil administration

1) ~~B~~ Bureaucratic compassion

- balanced regional development.
- remaining neutral in event of conflict between 2 groups.
- respecting the deals of local people.

strategy to be adopted by security forces -

- > Not to misuse AFSPA (Jeevan Reddy committee recommendation)
- Maintain intelligence
- Constant vigil on border areas
- Having defence exercise with neighbours
- Inter state coordination
- Triumpling the guerrilla warfare.

~~Hence~~ North East is gateway to AEC and crucial to India's growth story, so development cum reduction should be the motto to curb the threat of insurgency.

**Feed**  
(For OFFIC)

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Here G is Average & Poor.
TOTAL MARKS