



# VISION IAS

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20 AUG 2023

NO  
03

## GENERAL STUDIES (TEST CODE : 2420)

Name of Candidate	HRITWIK RANJAN		
Medium Eng./Hindi	ENGLISH	Registration Number	1085424
Center		Date	

INDEX TABLE		
Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7	10	
8	10	
9	10	
10	10	
11	15	
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13	15	
14	15	
15	15	
16	15	
17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

## INSTRUCTIONS

- Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).  
उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।
- There are **TWENTY** questions printed in **HINDI & ENGLISH** इसमें बीस प्रश्न हैं हिन्दी और अंग्रेजी में छपे हैं।
- All questions are compulsory.** सभी प्रश्न अनिवार्य हैं।
- The number of marks carried by a question/part is indicated against it.  
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
- 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. No marks will be given for answers written in medium other than the authorized one.  
प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
- Word limit in questions, if specified, should be adhered to.  
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
- Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.  
उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

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## EVALUATION INDICATORS

1. Contextual Competence
2. Content Competence
3. Language Competence
4. Introduction Competence
5. Structure - Presentation Competence
6. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

VisionIAS

1. भारत में राज्यों की राजकोषीय स्थिरता से संबंधित मौजूदा मुद्दों का परीक्षण कीजिए। इन मुद्दों के समाधान हेतु किन उपायों की आवश्यकता है?

Examine the persisting issues related to fiscal stability of states in India.

What measures are needed to address these issues? (Answer in 150 words) 10

Concept of fiscal federalism gives fiscal autonomy of to states. Although it has empowered states in certain ways, it has also created some persisting issues

Issues on fiscal stability of states

1) Rising debt and fiscal deficit

Eg - 31% debt to GDP ratio (RBI data)

2) shrinking pool of resources

Eg - 25% of Centre's gross tax revenue is cess which is not shared with states

3) Increasing expense on non-productive sectors. Eg - 35% of Telangana's revenue is spent on welfare measures

4) Populist schemes of states.

Eg - Old Pension scheme in Himachal  
- Power subsidy in Punjab

5) Stressed DISCOMs.

Eg- 60% of state government guarantees go to DISCOMs.

### Measures needed

- 1) Compliance with prudent economic policies. Eg- New Pension scheme
- 2) Compliance with FRBMA targets for States. Eg- Debt within 20%
- 3) Co-operative federalism with centre  
Eg- Increase in states borrowing unit to 5% of GSDP by centre
- 4) Optimistic revenue prediction. Eg- 10% higher revenues predicted
- 5) Avoiding populist tendencies to ease pressure on DISCOMs.

Stability of state government finances is essential to achieve \$5 trillion economy. NK Singh Committee recommendations must be considered.

2. उत्पादन से संबद्ध प्रोत्साहन (PLI) योजना आत्मनिर्भर भारत के लक्ष्य की प्राप्ति हेतु सरकार की प्रकार सहायता कर सकती है? इसके उद्देश्यों को प्राप्त करने में आने वाली चुनौतियों क्या हैं?  
How can the Production Linked Incentive (PLI) Scheme help in achieving an Atmanirbhar Bharat? What are the challenges in realizing its objectives?  
(Answer in 150 words) 10

PLI scheme is launched with the purpose of encouraging domestic production in certain selected sectors by incentivizing manufacturing and sales. Eg - Pharma sector

Helpful in achieving Atmanirbhar Bharat

1) Reduce import dependence.

Eg API dependence on china reduced from 90% to 70% in 2 years

2) Strengthen domestic manufacturing

Eg - Improved food processing sector after inclusion in PLI

3) Support emerging and critical industries. Eg - Solar panel manufacture

4) Promote foreign investment in domestic manufacturing sector.

Eg- FDI inflow reached ~85 billion dollars

5) Increase share of manufacturing in GDP. Eg - Currently ~ 25-30%

### Challenges

1) High import dependence on China in multiple sectors. Eg - Electronics

2) Red-tapism in Indian manufacturing sector → Disincentivizes production

3) Cheaper imports of certain commodities  
Eg - Iron and steel

4) Lack of semi-skilled workforce  
Eg - 45% population in agriculture

5) Poor credit facility. Eg - ~6% NPAs

PLI scheme can help achieve objectives of Make in India and make India a manufacturing hub.

3. जलवायु परिवर्तन में वृद्धि से मोटे अनाज की खेती का पुनरुद्धार किस प्रकार हो रहा है? भारत में मोटे अनाज के उत्पादन को बढ़ावा देने के लिए सरकार द्वारा क्या कदम उठाए गए हैं?

How is the advent of climate change leading to the revival of cultivation of millets? What steps have been taken by the government to give an impetus to millet production in India? (Answer in 150 words) 10

Millets are small grained hardy crops that have multiple health, environment and economic benefits. Eg- Towar, Bajra

Climate change → Millet cultivation

- 1) Can be grown in water stressed regions. Eg- Rajasthan, MP are leading producers
- 2) Have a higher shelf life than wheat and paddy. Eg- can last upto 10 years if properly processed
- 3) Can grow on wastelands using less nutrients and fertilizers
- 4) Less prone to attack from pests.  
Eg- Increase in locust attack due to climate change.

5) Does not cause strain on natural resources like wheat and paddy.

### Steps by government

1) Inclusion in MSP procurement  
⇒ Ensures return on investment

2) Initiatives at state level.

Eg- Odisha Millet Mission

3) RE&D on HYV seeds of millets

Eg- Krishi Vigyan Kendra

- MITRA scheme

4) Awareness among public about benefits of millets.

Eg- National Year of Millets 2018

5) Promotion at international forums

Eg- International Year of Millets 2021

Millets can help achieve SDG-2 of removing hunger and SDG-4 of well being for all.

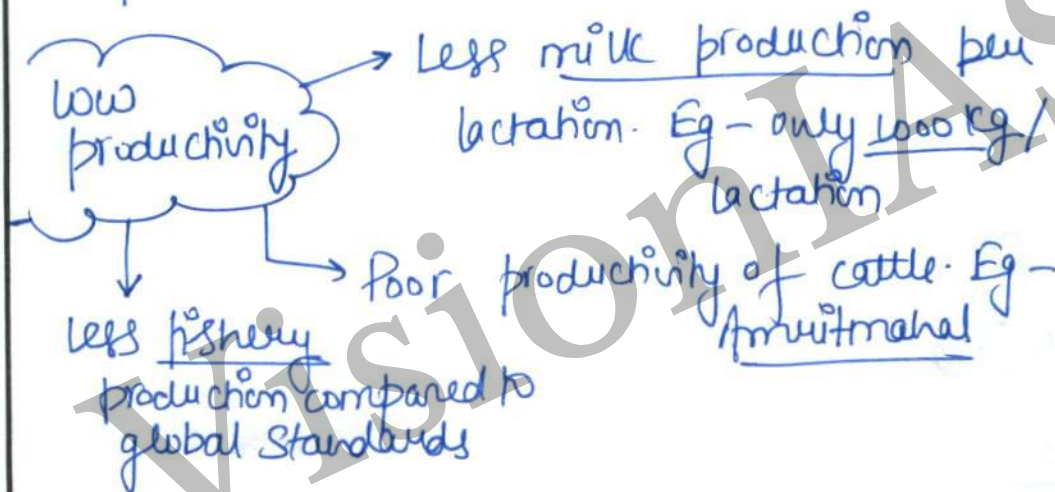
4. चारे की खराब गुणवत्ता और उसकी अपर्याप्त उपलब्धता भारत में पशुधन की कम उत्पादकता के लिए उत्तरदायी प्रमुख कारण हैं। चर्चा कीजिए।

Poor quality and inadequate availability of feeds and fodder are the major reasons behind the low productivity of the livestock in India. Discuss.

(Answer in 150 words)

10

Livestock sector contributes to ~30% of agriculture GVA. India is largest livestock owning country and ~66% rural population depends on this sector.



Reason - Poor feed and fodder

1) Lack of nutritious elements in fodder  $\Rightarrow$  Poor productivity

2) Poor feed decreases immunity to diseases. Eg - FMD disease  
- lumpy skin disease

3) Highly methanogenic components  
in animal feed.

Eg- Causes enteric fermentation of food

4) Reduces quality of milk and  
meat.

5) using discarded agricultural  
crops as feed for animals.

Way forward.

1) Adding essential micronutrients in  
animal feed. Eg- Havit Dhara  
feed

2) Scientific animal husbandry techniques

Eg- Rashtriya Samdhanu Ayog

3) Avoiding use of chemicals and  
growth regulators.

Livestock sector can help  
improve farmers' income and achieve  
targets of PM 7-Point Program.

5. एकीकृत कीट प्रबंधन (IPM) क्या है? IPM के उद्देश्यों पर प्रकाश डालते हुए, इसके विभिन्न घटकों पर चर्चा कीजिए।  
What is Integrated Pest Management (IPM)? State its objectives and discuss its various components. (Answer in 150 words) 10

Integrated Pest Management refers to managing increased pest attack events by taking up agricultural practices that can counter the impacts of pest attacks with minimal use of chemical pesticides.

### Objectives

- 1) Reduce impact of pest attack
- 2) Conserve quality of soil
- 3) Adopt nature-based solutions
- 4) Minimal use of chemicals  
Eg- Pesticides  
Weedicides

## Components

### 1) Conservation agriculture

↳ less tilling can reduce pest incidence

### 2) Organic farming

↳ Use of compost, organic fertilizers

### 3) Natural farming

↳ Beejamutham  
↳ Teerameutham  
↳ Waphasa  
↳ Arachhedan

### 4) Using natural agents to control pests.

Eg- Preying insects

IPM can help reduce crop losses and increase farmer income.

6. आपदा जोखिम न्यूनीकरण में अंतर्राष्ट्रीय सहयोग के महत्व की व्याख्या कीजिए। भारत ने आपदाओं को कम करने के लिए क्षेत्रीय सहयोग को मजबूत करने के लिए क्या पहल की है?

Explain the significance of international cooperation in disaster risk reduction. What initiatives has India taken to strengthen regional cooperation for reducing disasters? (Answer in 150 words) 10

Disaster risk reduction refers to ~~prevent~~ preventive measures in reducing risk of disasters by improving capacity and reducing vulnerability.

International co-operation

- 1) Cross-border impact of disasters.

Eg - Cyclones, Tsunamis

- 2) Financial and technological transfers for reducing risk

Eg - Early Warning System Program

- 3) Implementation of Policy

frameworks -

Eg - Sendai framework

4) Creation of infrastructure from best practices

Eg - Japan's earthquake resilient infrastructure

Indian initiatives

1) CDRI for resilient infrastructure

2) Project Mausam

3) Project SAGAR

↳ Security for All includes  
disaster security

4) Disaster assistance through money, vaccines, medicines.

7. अत्यधिक और अविवेकपूर्ण रेत खनन की पारिस्थितिक लागत इसके आर्थिक लाभों से कहीं अधिक है। संधारणीय रेत खनन के महत्व के संदर्भ में चर्चा कीजिए।  
The ecological cost of excessive and indiscriminate sand mining far outweighs its economic benefits. Discuss in context of the importance of sustainable sand mining. (Answer in 150 words) 10

Sand mining is the practice of extracting sand from the bottom of river and oceans for economic purposes like construction. Eg- sand mining in Yamuna river.

### Ecological cost

- 1) Uncontrolled flow of river  
Eg- Damages bridges on rivers, mangroves corals.
- 2) Coastal erosion and inundation  
Eg- Encroachment of rivers in Chennai
- 3) Reduces ground water table
- 4) Destroys habitat of micro-organisms living in seabed. Eg- crabs
- 5) Salinization of agriculture land.  
Eg- Increased salinity of Noida soil

## Need of sustainable sand mining

1) Proper vigilance of illegal sand mafias.

Eg - Illegal mining in UP.

2) Research on alternatives for construction.

Eg - m-sand, fly ash

3) Sand mining also deprives government for from revenues  $\Rightarrow$  Fiscal loss

4) Conservation of wetland ecosystem and biodiversity

Eg - 14% wetlands degraded

Government should come up with sustainable sand mining policy and enforcement mechanism to achieve SDG of 'life under water'.

8. थिएटराइजेशन योजनाओं के पीछे निहित तर्क पर चर्चा कीजिए, जो भारत में रक्षा बलों को विशिष्ट थिएटर कमांड में एकीकृत करना है। इससे जुड़ी चुनौतियां क्या हैं?

Discuss the rationale behind theaterisation plans, which seek to integrate the defence forces into specific theatre commands in India. What are the associated challenges? (Answer in 150 words) 10

Theaterization is the method of arranging armed forces into geography based commands, consisting of all 3 forces in each theater command.

Rationale behind theaterization

- 1) Tackle emerging security threats that need an overall 'whole-of-the-army' approach. Eg- 2 front war
- 2) Improve synergy between different forces. Eg - Terrestrial, naval and air capabilities
- 3) Adopt international best practices  
Eg- China, USA use this.

4) Currently, India has 1 theater command in Andaman and Nicobar

⇒ Natural extension of theater command

5) Recommended by Rangilwar Committee 1999.

### Challenges

1) May cause friction between 3 armed force chiefs

2) Declining expense on armed forces.

Eg - ~1.97% of budget

3) Difficulty in synergizing multi-dimensional capabilities

Eg - May make it bulky.

Theorisation can be helpful in improving efficiency and countering new age challenges.

9. व्याख्या कीजिए कि धन शोधन (मनी लॉन्ड्रिंग) के लिए शेल कंपनियों का उपयोग कैसे किया जाता है। भारत में धन शोधन के लिए शेल कंपनियों के उपयोग को रोकने के लिए क्या कदम उठाए गए हैं?

Describe how shell companies are used for money laundering. What steps have been taken to curb the use of shell companies for money laundering in India? (Answer in 150 words) 10

Shell companies are companies formed on-paper that do not perform any economic activities and are mainly used for tax evasion and money laundering

Shell companies for money laundering

- 1) Companies divide their profit into small chunks and park it with shell companies, showing them as expenses. Eg- R&D, Purchase expense
- 2) These companies may be located outside national jurisdiction which reduces tax liability → laundering
- 3) This money can be re-routed to

India through round-tripping,  
investment etc.

Step taken

1) Deregistration of companies on  
non-filing of financial statement  
for 2 years

2) Benami Company Prohibition  
Act 2015

3) Increased activities of Directorate  
of Enforcement to identify

4) Automatic exchange of information  
with other countries.

Shell companies need to be  
eradicated from financial system  
to ensure fiscal health and stability.

10. भारत ने हाल ही में अपना पहला जैविक डेटा केंद्र स्थापित किया है। इसके उद्देश्य और महत्व क्या हैं?

India has recently set up its first Biological Data Centre. What are its objectives and significance? (Answer in 150 words) 10

Indian government recently set up  
Indian Biological Data Centre (IBDC)  
at Faizabad to ensure consolidated  
data on biological resources.

### Objectives

1) Collect data on biological resources  
from publicly funded research

2) Create system of sharing data  
with others

Eg- FAIR principle

3) Improving research facilities  
on biological resources and processing  
of data.

## Significance

- 1) Reduce dependence on American and European databases
- 2) Easier access to data by Indian scientists +
- 3) Vaccine development
- 4) Monitoring of new variants of viruses.  
Eg- INSACOG data also present.
- 5) Counter emerging health challenges.

Eg - COVID

IBDC is very beneficial in implementing 'One Health' and achieving SDG-3.

11. भारत में तीव्र शहरीकरण को देखते हुए, शहरी क्षेत्रों में पूंजी निवेश की बढ़ती मांग को पूरा करने के लिए म्युनिसिपल बॉण्ड्स का उपयोग करना आवश्यक हो गया है। चर्चा कीजिए।  
In view of India's rapid urbanisation, it has become imperative to tap into municipal bonds to meet the rising demand of capital investment in urban areas. Discuss. (Answer in 250 words) 15

India has witnessed unprecedented urbanization in recent years, with ~35% population in urban areas, predicted to reach 50% by 2050. This has necessitated new financial models to sustain urban areas.

Need of municipal bonds

1) Financial empowerment of urban local bodies

Eg- ULBs own revenue ~0.1% of GDP

2) Provide for new sources of revenue generation for urban local bodies

Eg- Tax domains are mainly skewed towards property and liquor tax which are not adequate

3) Rising demand of urban infrastructure expense

Eg- ULBs contribute only 15% to total urban infrastructure creation  
↳ Rest ~~is~~ tied funds from state and centre

4) Need to support economic growth prospects of cities.

Eg- 65% GDP comes from cities

5) Need to create infrastructure for increasing population. Eg Migration

6) Need to counter new-age challenges like pollution. Eg- 75% Greenhouse gas

### Benefits of municipal bonds

↳ Easy access to public finances for urban local bodies

Eg- Bangalore recently issued

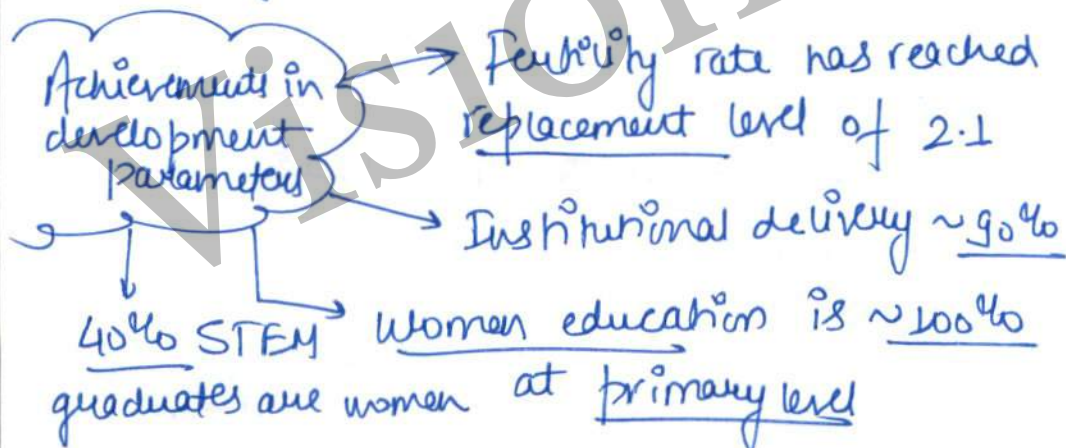
- 2) Helps in implementation of infrastructure projects. Eg- AMRUT, Jal Jeevan
- 3) Increases economic activities, hence more tax revenue for government
- 4) Reduces dependence on state and central government. Eg- 30% funds to states are fixed funds
- 5) Improves standard of lives of public, reduces pollution  
Eg- creation of public transport
- 6) Economic autonomy to local bodies to participate in capital market. Eg- Muni bonds are tradeable on stock exchange

Challenges → Lack of expertise on financial matters  
→ Lack of awareness

Municipal bonds can be instrumental in achieving SDG-11 of sustainable cities.

12. भारत ने आर्थिक संवृद्धि, महिला शिक्षा और प्रजनन दर जैसे विभिन्न विकास मानदंडों पर महत्वपूर्ण प्रगति हासिल की है। हालांकि, देश की महिला श्रम बल भागीदारी दर (FLFPR) वैश्विक स्तर पर सबसे कम है। चर्चा कीजिए। भारत में FLFPR में सुधार के लिए कौन-से कदम उठाए जा सकते हैं?
- India has achieved significant strides in various development parameters such as economic growth, women's education, and fertility rates. However, the country's Female Labour Force Participation Rate (FLFPR) remains amongst the lowest in the world. Discuss. What measures can be taken to improve the FLFPR in India? (Answer in 250 words) 15

LPG reforms of 1991 opened doors of economic growth for India that had a profound impact on all development parameters like women's education and fertility rates.



Despite these, Female LFPR that is proportion of female labour force employed is only ~22% (PLFS) that has actually declined from 30% in 2000.

## Reasons for poor LFPR

1) Dual burden of work for women

Eg- women spend ~3 times their daily hours in unpaid work of house than men  
(Time Use Survey)

2) Glass ceiling effect

Eg- women not allowed to reach high posts in companies

3) Harassment at workplace disincentivizes women. Eg- Vishaka case

4) Social stigma and domesticization of women. Eg- 40% women are housewives (Economic Survey)

5) Lack of high education and skilling opportunities

6) Breaks in career due to biological issues  
Eg- Pregnancy, menstruation

7) Lack of role models. Eg- Only 14% women entrepreneurs.

Measures needed

1) Avenues for skill development

Eg- ~52% women graduates are employable (India Skills Report)

2) Financial and social empowerment

Eg- PM- Jan Dhan Yojana, SHGs

3) Legislative reforms

Eg- Maternity Act to include paternity leave to create level playing field (like Sweden)

4) Awareness in society

Eg- Beti Bachao, Beti Padhao

5) Creation of role models for women

Eg- Sudha Murthy

6) Participation in high paying, STEM

jobs. Eg- KIRAN scheme

7) Safety at workplace. Eg- Vishaka Guidelines

According to IMF, Indian GDP would increase by 27% if women participation in workforce is increased.

13. फसल कटाई के बाद की मूल्य श्रृंखला में अक्षमताओं के कारण लघु और सीमांत किसानों की आजीविका पर अत्यधिक प्रतिकूल प्रभाव पड़ने के साथ-साथ फसल की हानि हो रही है। भारत के संदर्भ में चर्चा कीजिए। इन चिंताओं को दूर करने के लिए सरकार ने क्या कदम उठाए हैं?

The inefficiencies in post-harvest value chain are leading to crop losses, with significant adverse impact on the livelihood of small and marginal farmers. Discuss in the context of India. What steps has the government taken to address these concerns? (Answer in 250 words) 15

Despite being 2<sup>nd</sup> largest producer of foodgrains in the world, India ranks 107 in Hunger Index. This mismatch is due to inefficiencies in post-harvest value chain.

Inefficiencies in value chain

1) Lack of sufficient storage capacity

Eg - Buffer stock at peak ~ 90 Mtonnes } For data  
Buffer capacity ~ 85 Mtonnes

2) Poor participation of private sector in cold storage infrastructure.

Eg - Due to Essential commodities Act

3) Poor post-harvest processing infrastructure  
⇒ wastage of crops ~ 5-10% waste in

agriculture,  $\sim 11\%$  in horticulture (ICAR 2015)

4) Lack of forward and backward linkages. Eg- Poor farmgate procurement.

### Impact on Small & Marginal farmers

1) Exploitation by traders at APMC

Eg- Forced to sell at low price due to lack of cold storage

2) Poor transportation services from farm to market. Eg- MSP mainly benefits large farmers

3) Poor shelf-life of agricultural commodities due to lack of processing facilities

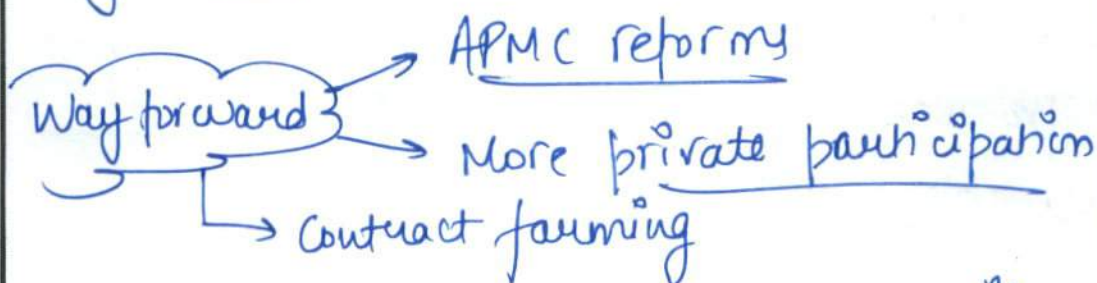
4) Rotting of foodgrains due to poor and damped storage conditions

Eg- Recent crop damage in Chennai  
↳ Rat infestation

5) Poor access to national and global markets.

Measures taken

- 1) Creation of Food Parks for processing  
Eg - 22 out of 42 food parks operational
- 2) Participation of private sector in  
storage infrastructure. Eg - Relaxation of  
Essential Commodities Act
- 3) Assistance in Transportation and Marketing  
Eg - Operation Greens, ODOP, PM-FME
- 4) Credit availability for storage and  
processing. Eg - MUDRA loans, PM-KISAN  
KCC loans, Sampada
- 5) Digitization of market access.  
Eg - e-NAM, e-Risan Mandi



Post harvest infrastructure is  
needed to achieve target of double farmer  
income under PM 7-point program

14. ऊर्जा क्षेत्रक के संदर्भ में डीकार्बोनाइजेशन, विकेंद्रीकरण और डिजिटलीकरण की प्रवृत्तियां तेजी से उभर रही हैं। चर्चा कीजिए।

When it comes to the energy sector, the trends of decarbonisation, decentralisation and digitisation are fast emerging. Discuss. (Answer in 250 words)

15

Energy sector is the backbone of the economy of any country and precedes the economic growth. India's energy sector is strong coal dependent (~50%)

Recent trends in energy sector

i) Decarbonization

i) Focus on low carbon energy production. Eg- Paris commitments

ii) Renewable energy push

Eg- India's Panchamrit commitment to produce 50% electricity from renewable sources

iii) Shift from coal-based thermal power plants to new alternate fuels.

Eg- Electric vehicles, Green Hydrogen

iv) Optimization of energy demand

Eg- India Cooling Action Plan (ICAP)

focuses on reducing cooling energy demand

v) Carbon neutrality in energy sector

Eg- Net-zero commitments of many countries

2) Decentralization

i) Local production of electricity

Eg- Energy Conservation Act (Amendment)

Bill 2022 provides for local energy production

ii) State-level renewable energy push

Eg- UP Bioenergy policy 2022

↳ 1 biogas plant in each tehsil

iii) Financial and technological transfers

to small countries and states to deal

with carbon-intensive energy sector

Eg- Just Energy Transition scheme

iv) Empowerment of local bodies in production and generation of electricity.

Eg - Waste to Energy Program

v) Participation of farmers in energy.

Eg - PM KUSUM

3) Digitization

i) Smart metering of electricity

Eg - In Bihar, Noida

ii) Digital monitoring of electricity production and transmission

iii) Incorporation of digital technologies in thermal power plants and other energy production sites.

iv) Carbon trade happens on digital platforms

Eg - ESCo's under PAF.

Energy sector is fast <sup>these</sup> undergoing drastic changes and must be adopted to achieve \$5 trillion economy

15. भारत में रासायनिक आपदाओं को कम करने संबंधी चुनौतियों पर चर्चा कीजिए। इन चुनौतियों का समाधान कैसे किया जा सकता है?

Discuss the challenges in mitigating chemical disasters in India. How can these challenges be addressed? (Answer in 250 words) 15

Chemical disasters are caused by release of harmful chemicals and toxins in atmosphere, water, soil etc that causes damage to biodiversity and economy.

Reasons behind chemical disasters

1) Negligence of people handling chemicals

Eg - Bhopal gas tragedy 1984

2) Poor competence of chemical plants

Eg - lack of warning system ⇒ Vizag  
styrene leak

3) Obsolete technologies used.

Eg - Assam Tinsukhia gas leak  
case.

4) Lack of knowledge among engineers.

5) Policy paralysis and poor vigilanceChallenges in mitigation1) Lack of accountability mechanismEg- strict liability principle still used despite court's direction to use Absolute liability principle in environment disasters (M.C. Mehta case)2) Lack of finances to upgrade infrastructure of chemical plants3) Poor compliance with EIA procedure while setting up plants4) No regular audit mechanismEg No involvement of local bodies5) Poor Environment Social Governance (ESG) in chemical plants6) Poor treatment of chemical waste before release into water.

Measures needed

1) Creation of comprehensive law and  
monitoring authority

Eg- similar to NDMA (or include under  
NDMA ambit)

2) Application of Absolute liability principle

3) Strict compliance with EIA norms.

4) Social audits of chemical plants

5) Hazard zonation and creation of  
buffer area under plants where habitation  
is avoided.

6) International Best Practices.

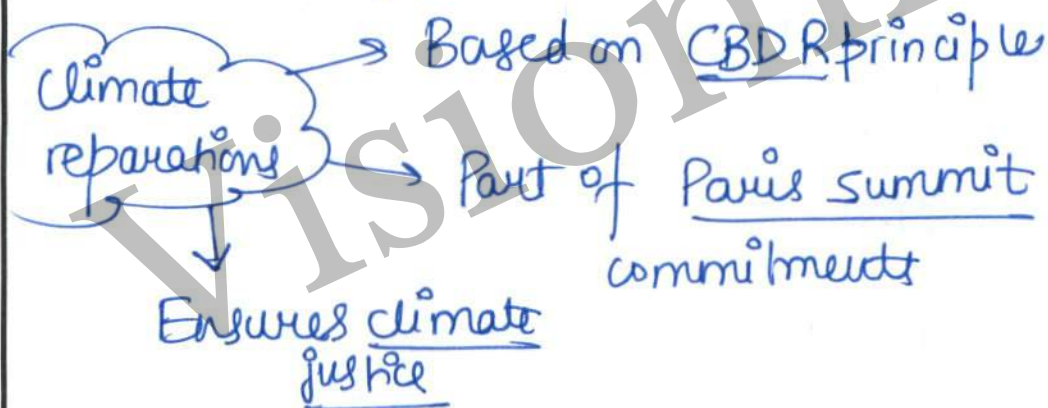
Eg- Chemical Toxins convention guidelines.

Chemical disasters can cause  
inter-generational issues and obstruct  
utilization of demographic dividend  
of India.

16. जलवायु क्षतिपूर्ति (क्लाइमेट रेपरेशन) के विचार से आप क्या समझते हैं? इस विचार को वर्तमान संदर्भ में लागू करने की आवश्यकता पर चर्चा कीजिए। इसके कार्यान्वयन के समक्ष आप क्या चुनौतियां देखते हैं?

What do you understand by the idea of climate reparations? Discuss the need to implement this idea in the current context. What are the challenges you foresee in its implementation? (Answer in 250 words) 15

Climate reparations refers to providing compensation to countries or communities affected by climate change impacts, by those who are responsible for the climate change consequences.



Need of climate reparation

↳ Empower affected countries to fight adverse impacts of climate change  
 Eg- Sea level rise in SIDN countries →  
 Need of relocation → Liibah

2) Apply concept of Polluter pays principle

Eg- western countries responsible for  
historic emissions

3) Ensure financial and technology  
transfer to vulnerable nations.

Eg- Loss and Damage Fund was created  
in Warsaw convention of UNFCCC for this

4) Help vulnerable countries build resilient  
infrastructure and climate friendly  
economic growth.

Eg- CDRI initiative

5) Ensure climate equity and climate  
justice.

### Challenges

1) Lack of will from developed nations.

Eg- Only 33% of promised climate  
finance was provided (COP 27 Glasgow)

- 2) Self-interest of developed countries  
Eg - Many countries returning to emission  
oriented economic path. Eg - Germany
- 3) Huge corpus of fund is needed  
Eg - \$100 Billion per annum
- 4) Political consensus is missing  
Eg - Withdrawal of USA and others  
from Kyoto Protocol
- 5) Poor implementation of carbon  
market mechanism. Eg - Article 6 of  
Paris Agreement not enforced
- 6) Suggest discussion on climate reparation  
Issue.

Way forward

- Proactive involvement of western countries
- Proper use of platforms like UNFCCC
- Role of leaders of Global South like India

Climate reparations are imperative to ensure achievement of 2°C temperature target

17. अदृश्य युद्ध (इनविजिबल वारफेयर) क्या है? भारत की सुरक्षा के समक्ष उत्पन्न होने वाली चुनौतियों को ध्यान में रखते हुए, अदृश्य युद्ध के खतरे से निपटने के लिए उठाए गए कदमों पर चर्चा कीजिए।  
What is invisible warfare? Keeping in view the challenges it poses to India's security, discuss the steps that have been taken to tackle the menace of invisible warfare. (Answer in 250 words) 15

Invisible warfare is the new age approach to warfare which is not directly fought on battlefields, rather in other domains like economy, technology, space, geopolitics. It is also called grey-zone warfare and is part of hybrid warfare.

Challenges posed by invisible warfare

1) Use of non-conventional domains which may not be India's strengths

Eg - Health sector

↳ use of biological weapons like COVID virus

2) Impact on economic stability

Eg - violation of 'Rules of origin' and application of non-trade barriers by China.

⇒ Damages domestic firms

3) Use of adverse technology to harm India's interests.

Eg- Cyberattacks on India's critical infrastructure like power grids

4) Weaponization of data

Eg- To influence public opinion by misinformation and fake news

5) Misuse of social media to provoke disharmony and impact elections

Eg- Delhi riots 2020

6) Use of multilateral diplomacy to harm India's interests.

Eg- use of UNSC to support Pakistan based terrorists by China

7) Using economic might to create adversaries in India's neighbourhood to 'contain' India

Eg- China's influence on Nepal, Sri Lanka

Measures taken

1) Strengthening of India's data protection domain. Eg- Personal Data Protection Act 2023

2) Research on new-age technology  
Eg- AI-ML, Big data

3) Regulations to monitor social media  
Eg- IT Intermediary Guidelines

4) Institutional measures to handle cyberattacks. Eg- CERT-IN.

5) Strengthening of soft power  
through diplomacy and goodwill.

Eg- Vaccine Maitri

6) Economic resilience by prudent  
engagement with external markets  
Eg- Denial of RCEP etc.

Insensible warfare can create  
new-dimensions of security threat and  
must be dealt with proactively.

18. भारत की राष्ट्रीय सुरक्षा को बनाए रखने में भू-स्थानिक डेटा और संबद्ध तकनीकों के महत्व पर चर्चा कीजिए।

Discuss the significance of geospatial data and associated technologies in safeguarding the national security of India. (Answer in 250 words) 15

Geospatial data refers to data on topography and different land uses of a region procured using satellite technology from space.

Significance in national security

1) Monitoring of sensitive areas

Eg- Left-wing extremism areas

↳ Red corridors

2) Monitoring maritime activities of neighbouring belligerent nations

Eg- Encroachment of China in Indian ocean region ⇒ Spying

3) Making policies around maritime security.

4) Ensuring security of critical infrastructure.

Eg- Nuclear power plants, power grids

5) Monitoring border areas

Eg- Proliferation of border villages  
along China - Arunachal Pradesh border

6) Countering insurgent activities of  
other nations. Eg- Pakistan's infiltration  
in Jammu & Kashmir during Kargil

7) Planning of military operations

Eg- Uri operation

Balacot strike

8) Strengthening navigation capabilities

Eg- NAVIC is a technology associated  
with geospatial data.

1) Undertaking investigations of serious crimes. Eg- Mobile tracking is done using geospatial technologies

### Associated challenges

1) Privacy issues

Eg- Right to Privacy may be breached

2) Relatively poor technology compared to nations like China

Eg- Deep sea ~~spy~~ spying vessels can't be detected by India's satellites

3) Lack of Research and finances to invest in these technologies.

Geospatial data is crucial to ensure internal and external security and counter the '2 and half front' security challenge.

19. शिक्षा में कृत्रिम बुद्धिमत्ता (AI) का अनुप्रयोग पारंपरिक शिक्षण विधियों में कैसे क्रांति ला सकता है और छात्रों के लर्निंग आउटकम्स में सुधार कर सकता है? व्याख्या कीजिए।

How can the application of artificial intelligence (AI) in education revolutionize traditional teaching methods and improve student-learning outcomes? Explain. (Answer in 250 words) 15

Artificial Intelligence is a deep learning technology that uses machine learning algorithms to make computers imitate the intelligence of humans. It has uses in diverse fields, including education.

AI to revolutionize teaching methods

1) Customized teaching materials for teachers. Eg- Chat GPT

2) Use of virtual reality in teaching  
Eg- AR/VR and MR technologies

3) Feedback mechanisms for teachers

4) Consolidation of relevant teaching materials and methods. Eg- Smart Boards

## AI to revolutionize student learning

- 1) Decentralized approach to education . Eg - Use of digital technologies like MooCs
- 2) Better understanding of needs of every student
- 3) Automated regenerative information can be accessed  
Eg - Google's Bard
- 4) Use of robots for teaching.

VisionIAS

20. भारत में परमाणु प्रौद्योगिकी के विकास में होमी जहांगीर भाभा का योगदान क्या है? क्या आपको लगता है कि भारत को अपनी ऊर्जा सुरक्षा सुनिश्चित करने के लिए परमाणु ऊर्जा के विकास को प्राथमिकता देनी चाहिए?

What are the contributions of Homi Jahangir Bhabha in the development of nuclear technology in India? Do you think India should prioritise the development of nuclear energy to ensure its energy security? (Answer in 250 words)

15

Homi Bhabha is known as father of Indian nuclear technology.

Contributions

- 1) Established BARC for nuclear research
- 2) Initiated India's nuclear program despite USA's threat
- 3) Instrumental in first nuclear test. - Eg- Operation Smiling Buddha
- 4) India's civil nuclear energy program.

Currently, nuclear energy is ~~~7%~~  
~7 MW of India's capacity.

### Benefits

1) Can ensure energy security

Eg - Reduce crude dependence

2) Reduce import bill

Eg - Energy imports are reasons  
behind 1.6% GDP

3) Reduce carbon footprint of  
energy sector

### Challenges

1) Radioactive waste

Eg - Uranium, Thorium

2) Access to raw material

3) Highly capital intensive

4) Danger of leakage.

Eg- Chernobyl

Way forward

1) Prudent establishment of plants

Eg- Kudankulam plant

2) Global co-operation

Eg- India-US civil nuclear deal

3) Raw material deals

Eg- Pakistan

Nuclear technology can help achieve 'Atmanirbharta' in energy domain.