



# VISION IAS

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## GENERAL STUDIES (TEST CODE : 1840)

Name of Candidate	DIKSHITA JOSHI		
Medium Eng./Hindi	ENG	Registration Number	
Center	ONLINE	Date	31/08/2022

INDEX TABLE		
Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
3	10	
4	10	
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15	15	
16	15	
17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

## INSTRUCTIONS

1. 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)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI** इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**  
सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.  
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. 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।
6. Word limit in questions, if specified, should be adhered to.  
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. 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.

All the Best

1. While fixed-term employment offers an ingenious way to address specific issues faced by both employers and employees, there are also some concerns associated with it. Discuss in the context of India.

(150 words) 10

हालांकि, नियत अवधि का रोजगार (फिक्सड टर्म एम्प्लॉयमेंट) नियोक्ताओं और कर्मचारियों दोनों के द्वारा सामना किए जाने वाले विशिष्ट मुद्दों को हल करने का एक सरल तरीका प्रदान करता है, लेकिन इसके साथ कुछ चिंताएं भी जुड़ी हुई हैं। भारत के संदर्भ में चर्चा कीजिए।

Fixed Term Employment refer to a contract based employment for a specific time period.

It addresses following issues faced by Employer & Employee.

I. Employer

→ flexibility in employment - on basis of production need.

→ does not have to cover security needs of FTE (saves cost)

→ Scope for choosing from wider talent pool.

II. Employee

→ fixed term security which is

Otherwise not available as casual worker

→ Gets similar incentives and allowances as permanent employee

### Issues with FTE

- 1) Inward voice of working class as FTE employee won't be able to fight for labour rights etc.
  - 2) No provision of skilling of rehired employee
  - 3) lead to further informalisation of workforce.
  - 4) lack of accountability of employer
- Thus, FTE must be promoted with adequate safeguards with respect to social security, skilling of employees.

2. An efficient logistics sector with a focus on warehousing is pivotal to the success of the Bharatmala Pariyojana. Discuss. (150 words) 10  
वेयरहाउसिंग पर केंद्रित एक कुशल लॉजिस्टिक्स क्षेत्रक भारतमाला परियोजना की सफलता के लिए महत्वपूर्ण है। विवेचना कीजिए।

Bharatmala Pariyojana aims at improving land connectivity across the country. It is done to reduce the logistics cost (currently 13% of GDP) of India.

Need for efficient logistics sector and warehousing

- ① To implement MultiModal Logistics Park, Warehouses will be needed for collection and distribution of supply from single point
- ② Supply Chain Resilience - Adequate warehousing with cold storage facilities will reduce wastage in supply chain.

③ All weather connectivity - is possible with full proof of warehousing

④ Enable private sector participation  
→ Warehouses in PPP mode can help in increasing efficiency

⑤ Improve competitiveness of exports, as 1 day delay in supply chain = \$1 Tariff Barrier (ES 2019)

⑥ Give impetus to Sagarmala dojans too.

Thus, warehousing is central to efficient logistics sector, which in turn is imperative to double our export share by 2025.

3. What do you understand by the term 'irrigation scheduling'? Bringing out the advantages provided by it, discuss the difficulties faced in applying it on a farm level. (150 words) 10

'सिंचाई निर्धारण (इरिगेशन शेड्यूलिंग)' पद से आप क्या समझते हैं? इसके द्वारा उपलब्ध कराये गए लाभों का वर्णन करते हुए, इसे खेत स्तर पर लागू करने के समक्ष आने वाली कठिनाइयों की विवेचना कीजिए।

Irrigation Scheduling refers to practice of efficient irrigation at certain intervals. It is used in 'Wet and Dry Farming' method.

### Advantages:

- ① Improve water use efficiency (National Water Policy goal of achieving 20% efficiency in water use)
- ② Prevent salinisation of soil and desertification of land due to excessive irrigation
- ③ Reduce methane emissions from agriculture to saturation.

④ Prevent Groundwater table depletion.

Difficulties faced in Irrigation / Scheduling

① 60% of agriculture is rainfed  
- not suited for these areas.

② Not suitable for all kinds of  
crops

③ Decrease productivity initially

④ Benefits of conventional  
irrigation method - can be time  
and cost saving.

Thus, irrigation scheduling  
along with Micro Irrigation and  
water harvesting can be used for  
improving water use efficiency in  
Agriculture.

4. While the Pradhan Mantri Fasal Bima Yojana was touted as the largest crop insurance scheme globally in terms of farmer participation, various concerns have arisen since its implementation. Discuss. (150 words) 10

यद्यपि, प्रधान मंत्री फसल बीमा योजना को किसानों की भागीदारी के संदर्भ में वैश्विक स्तर पर सबसे बड़ी फसल बीमा योजना बताया गया था, तथापि इसके कार्यान्वयन के बाद कई चिंताएं उत्पन्न हुई हैं। चर्चा कीजिए।

PMFBY is a crop insurance scheme, that is funded by both Centre and States

Components

- Insurance cover for crop loss due to disaster, pest attack.
- Insurance premium borne by Centre and States
- Insurance companies are responsible for awareness generation among farmers

↓  
Voluntary for loanee / non-loanee farmers

Issues with PMFBY:

- ① Definition of 'Disaster' decided by Centre, regional specific localities

not amounte.

② Coverage against pest attack but  
not damage by wild animals.

③ Insurance does not cover  
post harvest losses.

④ Monopoly of insurance companies  
- difficult to fix claims of poor  
farmers.

### WAY FORWARD

① Prevent monopoly of insurance  
companies

② Region-specific definition of disaster  
- decentralise to States.

③ Lower crop damage due to attack  
by wild animals

④ Support to farmers in claim settlement  
Thus, for Densifying farmer income goal  
efficient insurance scheme is imperative

5. The Stockholm Conference commenced the contemporary "environmental era", which brought a paradigm shift in the environmental governance and set a tone for multi-lateral environmental regime. Discuss. (150 words) 10
- स्टॉकहोम कॉन्फ्रेंस ने समकालीन "पर्यावरण युग" की शुरुआत की, जो पर्यावरणीय गवर्नेंस में एक आदर्श बदलाव लाया और उसने बहु-आयामी पर्यावरणीय व्यवस्था के लिए एक दिशा प्रदान की। विवेचना कीजिए।

Stockholm Conference commenced in 1972, heralded a 'environmental era'. It led to shift in environmental governance in following ways:

### I. Multilateral Cooperation

→ 1992, Rio Earth Conference, gave UN Framework on Climate Change and the legally binding Kyoto Protocol for developed countries.

+ Market mechanisms like Joint Implementation, CDM led to cooperation ~~bet~~ between developed and developing nation.

### II. Change / Reform in Domestic Legislations

→ For instance, Convention Biodiversity, led to Biodiversity Act in India.

### III. Common but Differentiated Responsibilities

→ Principle of equity in multilateral environment governance can be seen through Warsaw Loss and Damage Pact.

### IV. Institutionalise Environment Governance

→ through institutions / platforms for cooperation like International Solar Alliance, CDRI etc.

Thus, as Antonio Guterres has said, 'it is co-existence or no existence', multilateral environment governance bears same spirit.

6. The world has witnessed a huge surge in climate-induced disasters, which are largely driven by anthropogenic factors. In this context, analyse the role of early warning systems in mitigating the impact of the disasters.

(150 words) 10

विश्व में जलवायु-प्रेरित आपदाओं में अत्यधिक वृद्धि हुई है, जो बड़े पैमाने पर मानवजनित कारकों से प्रेरित हैं। इस संदर्भ में, आपदाओं के प्रभाव के शमन में पूर्व चेतावनी प्रणालियों की भूमिका का विश्लेषण कीजिए।

As per IPCC report, Rising  
temperature due to GHG emission  
are central to increase in frequency  
and intensity of disasters across  
world.

Climate induced disasters

- Cyclones
- Urban flooding
- Heat Waves
- flash droughts.

Early Warning Systems can be used for mitigating their impact:-

- ① Capacity Building  
- for instance Cyclone warning, 48 hrs.  
before can help authorities.

relocate locals and mobilise  
relief measures

## ② Risk Reduction

→ for instance L-flows app of  
Chennai, detect Urban flooding, and  
prevent encroachment on flood  
prone areas.

## ③ Planning

→ help authorities create trigger  
mechanisms, SOPs, mobilise support  
(NDRF etc.) accordingly.

## ④ Delivery of Relief and Rescue efforts can become more efficient by EWS.

Thus, EWS systems align with  
guidelines under Sendai Framework  
and must be internationally  
collaborated

7. Critically examine the implications of leveraging technology in policing.

(150 words) 10

पुलिस व्यवस्था (पुलिसिंग) में प्रौद्योगिकी का लाभ उठाने के निहितार्थों का समालोचनात्मक परीक्षण कीजिए।

With change in nature of threats in internal security (Cyber threat, social media, bio warfare) role of technology is needed for (SMART) policing.

Role of technology in policing :-

- ① Address lack of staff. (Robots, drones can be used for security)
- ② Help predict offenders and pattern of crimes. Ex-UK uses AI for predicting habitual offenders
- ③ Use of Social Media Intelligence by using data analytics can help prevent public order issues.
- ④ Data sharing across borders of

of state. Ex - use of CCTNS  
portal, NATGRID for sharing  
intelligence

However, leveraging technology  
can have following limitations:

- ① Lack of <sup>efficient.</sup> cyber security infrastructure
- ② Data Privacy issues
- ③ Misuse of technology - Ex -  
data under CrPC Amendment can be  
stored for 70 years - scope for misuse
- ④ Lack of skilled personnel in  
using technology
- ⑤ Infrastructural issues still  
remain - modernisation, weaponry  
etc.  
Thus, role of technology in

8. How far do you agree with the view that climate change poses a threat to international peace and security? **(150 words) 10**

आप इस विचार से कहाँ तक सहमत हैं कि जलवायु परिवर्तन अंतर्राष्ट्रीय शांति और सुरक्षा के लिए खतरा है?

9. What do you understand by a virtual private network (VPN)? Highlight its advantages and discuss the concerns posed by it. **(150 words) 10**

वर्चुअल प्राइवेट नेटवर्क (VPN) से आप क्या समझते हैं? इसके लाभों पर प्रकाश डालिए और इससे उत्पन्न चिंताओं पर चर्चा कीजिए।

10. The discovery of the Higgs Boson at the Large Hadron Collider in CERN completed 10 years recently. In this context, discuss the role played by CERN in overall scientific development. **(150 words) 10**

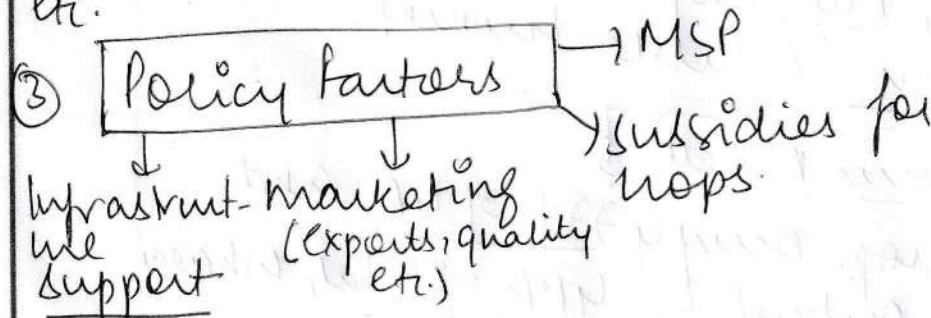
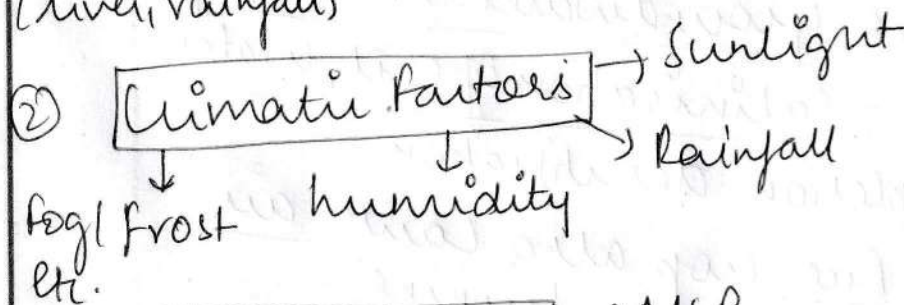
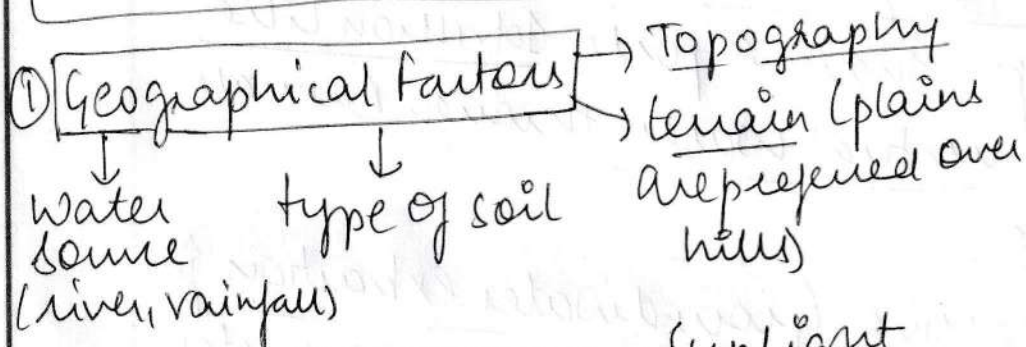
सर्न (CERN) स्थित लार्ज हैड्रॉन कोलाइडर में हिग्स बोसोन की खोज को हाल ही में 10 वर्ष पूरे हो गए हैं। इस संदर्भ में, समग्र वैज्ञानिक विकास में सर्न द्वारा निभाई गई भूमिका पर चर्चा कीजिए।

11. Highlighting the factors that affect the cropping pattern in India, discuss the need for modifying it in the context of the emerging agro-ecological concerns. (250 words) 15

भारत में फसल पद्धति को प्रभावित करने वाले कारकों पर प्रकाश डालते हुए, उभरती कृषि-पारिस्थितिकी चिंताओं के संदर्भ में इसे संशोधित करने की आवश्यकता पर चर्चा कीजिए।

Cropping pattern refers to distribution of different types of crop across agro-climatic zones of country.

Factors affecting cropping pattern:



India's cropping pattern is highly skewed towards Cereal Crops amounting for 77% of Gross Cropped Area

Need for modifying cropping pattern

① Environmental Need

→ Rice / Sugarcane are water guzzling crops, India exports 1 trillion litre of virtual water through Basmati Rice

→ Excessive groundwater extraction for irrigation - salinisation of soil, water table depletion desertification.

→ further, Rice crop also cause air pollution (straw burning).

② Economic Need

→ Cereal crop occupy 77% of CA and give output of 41% of total, whereas

High Value Crops amount for 19.1% of GCA  
and produce 41.1% of output.

→ Niti Ayog suggests diversification  
of crop needed for Doubling Farmer  
Income

→ Export Policy (Agriculture) of India  
requires diversification of export  
basket.

→ Diversification also needed for FPI  
Industry boost.

### ② Nutritional Need

→ to improve intake of nutrient,  
protein based diet instead of carbony-  
hydrate rich diet.

→ Also, needed 'geo-climatic', cultural  
food preservation.

Thus, government initiative of  
Mission for Integrated Development of  
Agriculture, Push for pulse production  
are aligned to change cropping  
pattern

12. While the budgetary reforms undertaken by the Central government in recent years have led to better management of government expenditure, there are some issues that still need redressal. Discuss. (250 words) 15

जहाँ हाल के वर्षों में, केंद्र सरकार द्वारा किए गए बजटीय सुधारों के कारण सरकारी व्यय का बेहतर प्रबंधन संभव हुआ है, वहीं कुछ ऐसे भी मुद्दे विद्यमान हैं जिनका समाधान किया जाना अभी बाकी है। विवेचना कीजिए।

Budgetary Reforms by Government align with Government's Policy of 'Modernise or Monetise Assets'

Some of the reforms by Government

### I. REVENUE BUDGET

#### 1) Improved tax collection

- Introduction of GST (2017)
- Direct Tax Vivad & Vishwas Scheme

→ National e-Assessment Centre for tax grievance redressal

→ Tax on Virtual Digital Asset

#### 2) Improved Non-Tax Revenue Receipts

- 1st Corporate Bond ETF - Bharat-22

- Disposal Asset Monetisation Policy.
- 3) Reduction in Revenue Expenditure
- continued subsidies on food, fertiliser
- + push for privatisation of government sector.

## I. CAPITAL BUDGET

- 1) Capital Receipts → NaBFID
- Improved Disinvestment Policy.

- 2) Capital Expenditure
- National Infrastructure Pipeline  
(102 lakh crore).

However, there are certain issues with these reforms :-

## I. REVENUE BUDGET

- 1) GST - Shortfall during COVID,  
affect fiscal federalism.

2) limited tax collection / recovery  
under Direct Tax Vivad & Vishwas  
Scheme

3) revenue expenditure reduction  
at cost of welfare subsidies (food,  
health etc.).

## II. Capital Budget

1) Disinvestment - riddled with  
corruption, misappropriation, drawing  
heavily on exchequer.

2) Capital Expenditure not enough  
to drive private sector in infrastr-  
ucture.

Thus, government need to regain  
GST collection, encourage private  
investment, and decrease pressure  
on welfare subsidy reduction.

13. For India to create a 'future ready' railway system, it must harness innovation and resource efficiency. Discuss the statement in the context of the measures enlisted in the National Rail Plan 2030. (250 words) 15

भारत को 'फ्यूचर रेडी' रेलवे प्रणाली के सृजन हेतु, नवाचार और संसाधन दक्षता का उपयोग करना चाहिए। राष्ट्रीय रेल योजना 2030 में सूचीबद्ध उपायों के संदर्भ में इस कथन की विवेचना कीजिए।

National Rail Plan announced  
in recent Budget, envisages to  
create a 'future ready' Railway  
System.

Measures enlisted in NRP 2030

- ① 100% electrification of Railways  
by 2024
- ② Net zero emission goal of IR  
by 2030
- ③ Safety technology - KAVACH  
Indigenously developed
- ④ Increase modal share of IR  
from 27% to 54% by 2025
- ⑤ Modernisation of IR to improve

Service delivery.

In light of these goals, there is need for innovation and Resource

Efficiency in IR as :-

- ① Very high Operating Ratio (98) of IR currently
- ② Very low Internal Revenue Generation sources.
- ③ Lack of private sector participation in IR.
- ④ Cross subsidisation of cost between passenger and freight - reduce competitiveness of freight sector
- ⑤ Poor Quality of service delivery of IR.
- ⑥ Absence of modernisation efforts of IR; due to budgetary constraints

Thus, innovation and RE can be used in following ways:-

① Pitroda Committee recommended Modernisation of IR, using AI, ML, to improve service delivery.

② Biker Desroy recommends privatisation of IR to increase investment in innovation.

③ Decreasing energy consumption by Overhead electricity generation Technology.

④ Use of Satellite, drones for traffic management in IR.

Thus, an efficient IR is sine qua non for bringing down logistics cost and in achieving goal of \$5 trillion economy by 2025.

14. Discuss the significance of technology in the Indian agricultural sector. Also, state the challenges in realising its potential to improve agricultural efficiency and increase the income of the farmers. (250 words) 15

भारतीय कृषि क्षेत्रक में प्रौद्योगिकी के महत्व पर चर्चा कीजिए। साथ ही, कृषि दक्षता में सुधार और किसानों की आय बढ़ाने की इसकी क्षमता का उपयोग करने में आने वाली चुनौतियों का भी उल्लेख कीजिए।

Indian Agriculture sector is  
ruined by low technology  
incorporation, for ex - only 40%  
mechanisation rate, compared to 98%

in USA

In light of this, technology has  
huge potential to improve Agriculture  
efficiency :-

### I. Resource Efficiency

① Irrigation Water efficiency in  
India is 32%. While developed  
country have (40-50% efficiency) -  
Micro Irrigation, drone sprinkler  
Irrigation can be used.

② Fertiliser Use efficiency can be improved by 'Precision Agriculture' using AI.

## II. Diversification of Crop

→ Biotechnology can be used to produce hybrids that have higher yield = better income.

## III. Market Efficiency

→ Blockchain can be used to improve marketing. For ex- Coffeeboard is using Blockchain for marketing.  
→ e-NAM has improved price discovery for farmers.

## IV. Other benefits

→ Nanotechnology for fertiliser delivery  
→ Decrease expenditure on fertiliser.  
→ Rootstock technology can help in

creation of high value crops, improve farmer income.

However there are certain  
Challenges

Challenges in using technology

- low economy of scale = small landholdings
- low private investment in agriculture (only 2% of total).
- lack of literacy awareness among farmers

↓ User friendly technology for high cost women farmers - not present.  
of technology like AI, robot.

WAYS FORWARD

- ① Increase private investment in Agriculture here.
- ② Niti Ayog suggest increase investment in agriculture R&D to 2%
- ③ Extension Support to farmers  
Modernisation of Indian Agriculture  
is one of DPSP (Art. 48), thus must be promoted by govt.

15. Despite the digital transformation in the Public Distribution System (PDS) in India, several challenges still remain. Elaborate. Also, suggest measures to address them. (250 words) 15

भारत में सार्वजनिक वितरण प्रणाली (PDS) में डिजिटल रूपांतरण के बावजूद, अभी भी अनेक चुनौतियां विद्यमान हैं। सविस्तार वर्णन कीजिए। साथ ही, इनके समाधान हेतु उपायों का सुझाव दीजिए।

Public Distribution System is incorporated as part of National Food Security Act. It is at helm of food Corporation of India.

Several reforms for digital transfor  
mation have not addressed following

Challenges :-

① Exclusion and Inclusion Error  
→ PRS legislative highlights 55-1  
exclusion and 27-1 inclusion error  
in PDS beneficiaries.

② High Wastage  
→ Almost 60,000 tonnes of grains  
were damaged between (2011-16).

→ Almost 30% Storage is under loweage and Plinth System, that is leading to wastage.

### ③ Limitations of FCI

→ lack autonomy in liquidation policy of excess food grains - hence, overgrowing buffer stock.

→ lack of decentralisation of collection and distribution

### ④ Leakage from PDS

→ Shanta Kumar Committee highlights upto 40% leakage in black market.

### ⑤ Cost efficiency

→ ES 2019 highlights burgeoning food subsidy bill due to lack of rate revision of grains.

## ⑥ Digital exclusion

→ biometric identification failure  
due to damaged thumb impressions -  
particularly with labourers.

## Measures Needed to Address them

### ① Reduce Wastage

→ World Food Programme suggest  
Mobile Storage Units and Scientific  
Storage of grains.

### ② [FCI Autonomy] - in liquidation

of excess stock - Niti Aayog.

### ③ Shanku Kumar Committee suggest

outsourcing of collection, Storage  
and distribution of grains.

### ④ Citizen Centricity - MP uses 'SMS' to

ensure retrieval of PDS by citizens.  
Efficient PDS is at heart of India's  
achievement of SDG-2-ZERO HUNGER

16. Discuss the various concerns that exist with regard to fuel efficiency regulations for vehicles in India. Also, suggest the measures that can be taken in this regard. (250 words) 15

भारत में वाहनों के लिए ईंधन दक्षता विनियमों के संबंध में विद्यमान विभिन्न चिंताओं पर चर्चा कीजिए। साथ ही, इस संदर्भ में किए जा सकने वाले उपायों का भी सुझाव दीजिए।

BSVI norms are latest regulation regarding fuel efficiency in India. They are based on European Standards for fuel efficiency.

Issues with these norms

- ① Lack of appropriate technology to implement these norms, with Automobile Industry.
- ② Obsolescence of Old vehicles - high loss for automobile sector which is already reeling under e-vehicle/COVID induced losses
- ③ Inconsistent jump from BS-IV

to BSVI shipping BS-VI

- (4) Difficult to increase demand  
in face of rising vehicle price  
due to regulations
- (5) Implementation issues with  
these norms.

### Measures Needed

- (1) Gradual phasing of regulation  
- lower to bigger vehicles / passenger  
vehicles first.
- (2) R&D for low cost technology or  
gradual shifting e-vehicle.
- (3) Addressing concerns of Automobile  
industry and customers with  
regard to price rise. Government  
can provide <sup>tax</sup> rebate on new

vehicles

- ④ Use of Biofuel or blended fuel compatible with existing IC engines Ex- E85.

Thus, as fuel efficiency is critical to meet India's goals in Paris Agreement, their effective implementation must be undertaken via multi-stakeholder approach.

17. Urban fire is becoming a serious cause of concern in Indian cities. In this context, highlight the major causes behind urban fires in India. What steps can be taken to build robust fire resilience in Indian cities? (250 words) 15

शहरी आग (अर्बन फायर) भारतीय शहरों में चिंता का एक गंभीर कारण बनती जा रही है। इस संदर्भ में, भारत में शहरी आग के प्रमुख कारणों पर प्रकाश डालिए। भारतीय शहरों में मजबूत अग्नि रोधी क्षमता के निर्माण हेतु क्या कदम उठाए जा सकते हैं?

Urban fire incidents in recent years - Anaaj Mandi (Delhi), Smart Washing Center, Maharashtra Hospital fire, have raised concerns around it.

Major Causes of Urban Fire are

① Unplanned Urbanisation  
+ congested localities, spreading slums

② Administrative Issues

+ Fire Safety is under 12<sup>th</sup> schedule (243-w) - responsibility of ULBs - but they lack fund, function, functionaries to devolve it.

→ Buildings lack conformity to  
'Model Building Bye laws' - lack  
ventilation, fire exit etc.

+ lack of efficient audit mechanism  
further exacerbates it.

### ③ Technological / Infrastructural Issues

→ Lacked skilled workforce of architect  
structural engineers and technicians

+ Lacked of fire safety technology  
(sprinkler, fire alarm) etc.

### ④ Apathy of citizens and Adminis- tration

### Measures Needed to Address

#### ① Urbanisation

→ Adequate planning by accommodating  
open spaces, electrical wire safety etc.

→ Devolution of fund, function,  
functionaries to ULBs.

### ② Administration

→ Strict Adherence to Model Building  
Byelaws - Regular audit to  
ensure safety.

### ③ Infrastructure and technological

→ Dedicated workforce of skilled  
engineers and technicians  
→ fire Alarm, Water Sprinklers,  
fire exits in buildings.

### ④ Fire Accountability

→ fire safety among citizens  
(Resident Welfare Association) and  
officials.

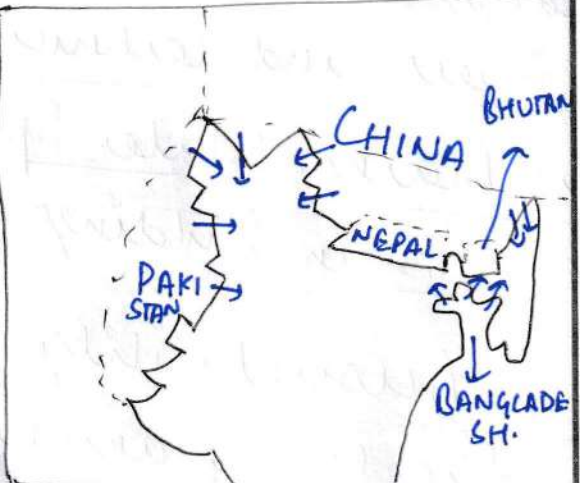
Sustainable cities are key for  
achievement of SDG-11 for  
India.

18. Drones in border areas present a serious threat for border management in India. Elaborate. Also, discuss the different measures taken to regulate the use of drones in India. (250 words) 15

सीमावर्ती क्षेत्रों में ड्रोन, भारत में सीमा प्रबंधन के समक्ष एक गंभीर खतरा उत्पन्न करते हैं। सविस्तार वर्णन कीजिए। साथ ही, भारत में ड्रोन के उपयोग को विनियमित करने के लिए किए गए विभिन्न उपायों पर चर्चा कीजिए।

India's land border of around 7000km faces several threats from neighbouring countries. Drones have somewhat exacerbated existing threats.

Drones as threat to India's border management



① Used for drug delivery - Ex- across Pakistan Border

② Used for surveillance - Ex- across China Border.

③ Remotely Operable, hence, difficult to trace perpetrator.

- ④ Low cost technology - viable for terrorist, militants
- ⑤ Have been used for weapon delivery across Punjab borders - can fuel insurgency in India.
- ⑥ Use of nano and micro drones that can't be located until really close.

### Measures taken by India to regulate Drones

- ① Regulation of UAV, rules by Ministry of Civil Aviation.
- ② Jurisdiction of BSF has been increased to 150 km from erstwhile 50 km from border.
- ③ licensing requirement for use medium and large sized drones

④ Anti-drone technology - Use of Jammers, GPS spoofing.

⑤ Use of Drones by Army itself for surveillance

⑥ Reconnaissance Satellite (ELINT)  
etc. for earth observation  
- EMISAT.

⑦ Promotion of indigenous manufacturing and R&D in drone technology for self-reliance.

⑧ Defence Modernisation Policy to tackle new age threats.

Thus, with changing nature of threats across border, India's pace with modernisation in defence is imperative for national security.

19. Despite a global framework to prevent weaponization of space, it has been increasing in the recent times. Discuss. Also, give an account of the implications of space weaponization. (250 words) 15

अंतरिक्ष के शस्त्रीकरण को रोकने के लिए एक वैश्विक ढांचा होने के बावजूद, हाल के दिनों में इसमें वृद्धि हुई है। चर्चा कीजिए। साथ ही, अंतरिक्ष के शस्त्रीकरण के निहितार्थों का विवरण दीजिए।

Outer Space Treaty of UN, seek to prevent weaponisation of space.

Yet, it has been increasing in recent times due to :-

- ① Advancement in space technology
- ② Role of space in National Security  
Ex- Anti-Satellite technology to prevent surveillance by enemy state.
- ③ Lack of clear definition in OST, it prevents weapons of mass destruction in space, not weapon sale.
- ④ Apprehensions with regard to China's

Rise - concern for all. Ex - Hyperballistic  
Missile technology demonstration  
by China.

- ③ There are no binding regulations  
to prevent weaponisation of  
space.

### Implication of space weaponisation

- ① Exacerbate security issues  
around the world.
- ② Increase space debris ⇒ Kessler  
syndrome - hinder use of space  
for peaceful purposes.
- ③ Exacerbate inequality between  
developed and developing world.  
+ imbalance of power.
- ④ Entry of private sector in  
space may reduce accountability  
in use of space.

⑤ Direct resources from environment conservation and human development - unethical.

### Measures Needed

① Ratify Paris Treaty, that prevents weaponisation of space.

② Clear definition and fix accountability for misuse of space.

③ Regulate use of space by private sector.

④ India can push for peaceful use of space during its UNSC tenure.

Peaceful Use of Global Common is at helm of peace and safety of humanity across the world.

20. What do you understand by a bio-economy? Highlight the role that the National Biotechnology Development Strategy 2021-2025 can play in creating a robust bio-economy in India. (250 words) 15

बायो-इकोनॉमी (जैव-अर्थव्यवस्था) से आप क्या समझते हैं? भारत में एक मजबूत बायो-इकोनॉमी के सृजन में राष्ट्रीय जैव प्रौद्योगिकी विकास रणनीति 2021-2025 द्वारा निभाई जा सकने वाली भूमिका पर प्रकाश डालिए।

Bio-economy refers to use of biological resources for commercial gains

Components of Bio-economy

- Bio-mimicry
- Bio-prospecting
- Bio-utilisation

Biotechnology refers to modification of biological resources for improving efficiency in production. It is used in industries (grey biotech), in agriculture (green biotech), in medical (red biotech) etc.

National Biotechnology  
Development Strategy can

aid in bio-economy in following  
ways:

## I. Industries

i) Waste to wealth - waste water  
treatment using micro-organisms  
can generate useful products like  
Protein (yeast).

ii) Metal Prospecting - use of  
micro-organisms for prospecting of  
precious metals from scrap like gold

iii) Extraction of minerals from  
Ore can be made efficient.

## II. Agriculture

i) GM crop like Bt cotton have  
improved yield and income  
of farmers.

ii) Hybrid crops can aid in creating  
climate-resistant  
crops.

### III. Energy Needs

→ Modified micro-organisms can be used for production of biofuel.

### IV. Other areas

→ Biotechnology will aid in 'Deep Ocean Mission' of India.

Thus, Biotechnology can prove effective in helping India achieve \$5 trillion goal by 2025.