

# NEXT IAS

NEXT IAS (Head Office) : 27-B, Pusa Road, Metro Pillar no. 118, Near Karol Bagh Metro, New Delhi-110060

Bhopal Centre: Plot No. 46, ZONE-2, M.P. Nagar, Bhopal-462011

Ph: 8081300200, 8827664612 | E-mail: mts@nextias.com | Web: www.nextias.com

(To be filled by candidate)

Name of Candidate : ANKIT AGRAWAL

Roll No. : 0602108

Registration Number : PTPP220280 Date of Examination : 06/08/23

Exam Centre : Old Rajinder Nagar ☐

Bhopal ☐

Online ☒

Test - 3

Start time

6:00 PM →

End time

9:05 PM

Code : TC073

## MTS IGP Batch 2023

### GENERAL INSTRUCTIONS

This Question-cum Answer (QCA) Booklet contains 56 pages. Immediately on receipt of the booklet, please check that this QCA booklet does not have any misprint or torn or missing pages or items, etc. If so, get it replaced by a fresh QCA booklet.

Candidates must read the instructions on this page and the following pages carefully before attempting the paper.

Candidates should attempt the questions strictly in accordance with the instructions specified in the question paper and in the space prescribed under each question in the booklet. Any answer written outside the space allotted may not be given credit.

Question paper will be provided separately and can be taken by the candidates after conclusion of the exam.

SUBJECT/PAPER  
GENERAL STUDIES

Invigilator's Sign. : .....

(For filling by Examiners only)

Evaluator Code :

| Q.No        | Pg No. | Maximum Marks | Marks | Total |
|-------------|--------|---------------|-------|-------|
| 1           | 1      |               |       |       |
| 2           | 3      |               |       |       |
| 3           | 5      |               |       |       |
| 4           | 7      |               |       |       |
| 5           | 9      |               |       |       |
| 6           | 11     |               |       |       |
| 7           | 13     |               |       |       |
| 8           | 15     |               |       |       |
| 9           | 17     |               |       |       |
| 10          | 19     |               |       |       |
| 11          | 21     |               |       |       |
| 12          | 24     |               |       |       |
| 13          | 27     |               |       |       |
| 14          | 30     |               |       |       |
| 15          | 33     |               |       |       |
| 16          | 36     |               |       |       |
| 17          | 39     |               |       |       |
| 18          | 42     |               |       |       |
| 19          | 45     |               |       |       |
| 20          | 48     |               |       |       |
| Grand Total |        |               |       |       |

Signature

MACRO COMMENTS



## IMPORTANT INSTRUCTIONS

CANDIDATES SHOULD READ THE UNDERMENTIONED INSTRUCTIONS CAREFULLY. VIOLATION OF ANY OF THE INSTRUCTIONS MAY LEAD TO PENALTY.

### DONT'S

1. Do not write your name or registration no. anywhere inside this Question-cum-Answer Booklet.
2. Do not write anything other than the actual answers to the questions anywhere inside your QCA Booklet.
3. Do not tear off any leaves from your QCA Booklet, if you find any page missing do not fail to notify the supervisor/invigilator.
4. Do not leave behind your QCA Booklet on your table unattended, it should be handed over to the invigilator after conclusion of the exam.

### DO'S

1. Read the Instructions on the cover page and strictly follow them.
2. Write your registration number and other particulars, in the space provided on the cover of QCA Booklet.
3. Write legibly and neatly. Do not write in bad/illegible handwritings.
4. For rough notes or calculation, the last two blank pages of this booklet should be used. The rough notes should be crossed through afterwards.
5. If you wish to cancel any work, draw your pen through it or write "Cancelled" across it, otherwise it may be evaluated.
6. Handover your QCA Booklet personally to the invigilator before leaving the examination hall.

Q.1

अप्रत्याशित कर (विंडफॉल टैक्स) से आप क्या समझते हैं? क्या आपको लगता है कि अप्रत्याशित करों से संपदा का प्रभावी ढंग से पुनर्वितरण हो सकता है और अधिक आर्थिक समानता को बढ़ावा मिल सकता है? (150 शब्दों में उत्तर दीजिए) 10 अंक

What do you understand by Windfall tax? Do you think that windfall taxes can effectively redistribute wealth and promote greater economic equality? (Answer in 150 words) 10 Marks

Windfall tax is a tax on profits generated due to unwanted circumstances or on a sin good. eg. Windfall tax on oil products in the wake of higher profit due to Russia-Ukraine war.

Effectively Redistribute wealth & Promote economic equality

① Resource mobilisation by Government do spend on physical & social infrastructure  
eg. tax on oil marketing company for subsidising PM Ujalla yojna

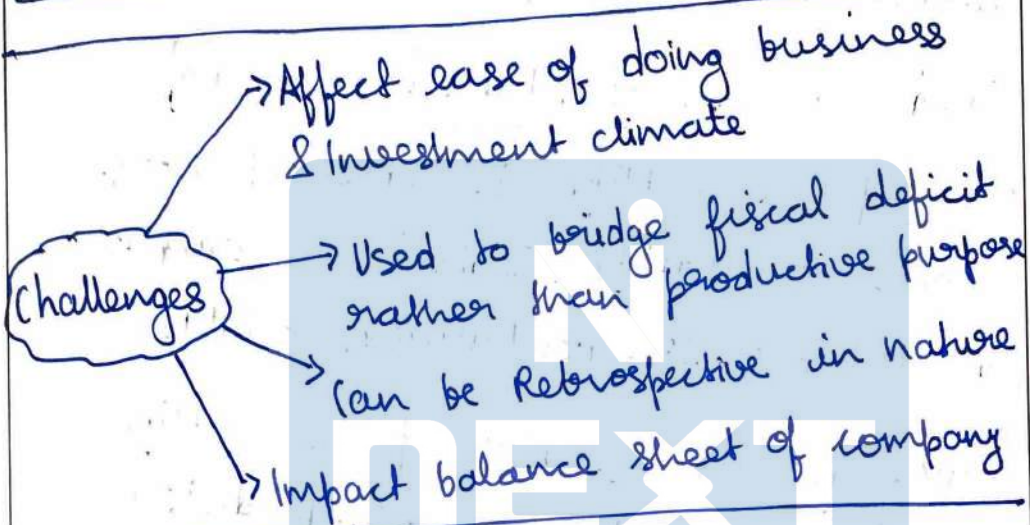
② Consumer Protection by ensuring the companies pass on benefits to consumer rather than rising profits.

③ Parity between exports & domestic demand

eg. OMCs selling to EU & USA creating shortage domestically.

④ Control Inflation & thus ensure macro-economic stability

⑤ Act as surcharge on direct taxes which is fiscal tool to redistribute wealth.



To address the challenges & to ensure its effective utilisation, there is need for legislative enactment to standardize its applicability & usage to bring transparency.

Q.2

नई मौद्रिक नीति समिति (एमपीसी) व्यवस्था के अंतर्गत मुद्रास्फीति लक्ष्यीकरण को क्रियान्वित करने की कथित सफलताओं और चुनौतियों पर चर्चा कीजिए। (150 शब्दों में उत्तर दीजिए) 10 अंक

Discuss the perceived successes and challenges of implementing inflation targeting under the new Monetary Policy Committee (MPC) regime. (Answer in 150 words) 10 Marks

Government in consultation with RBI set targets for inflation which is set at 2%-6% as lower & upper tolerance level.

### Perceived Successes of Inflation targeting

① Consumption stability in times of global economic uncertainty (India is consumption based economy  $\rightarrow$  58% contribution to GDP)

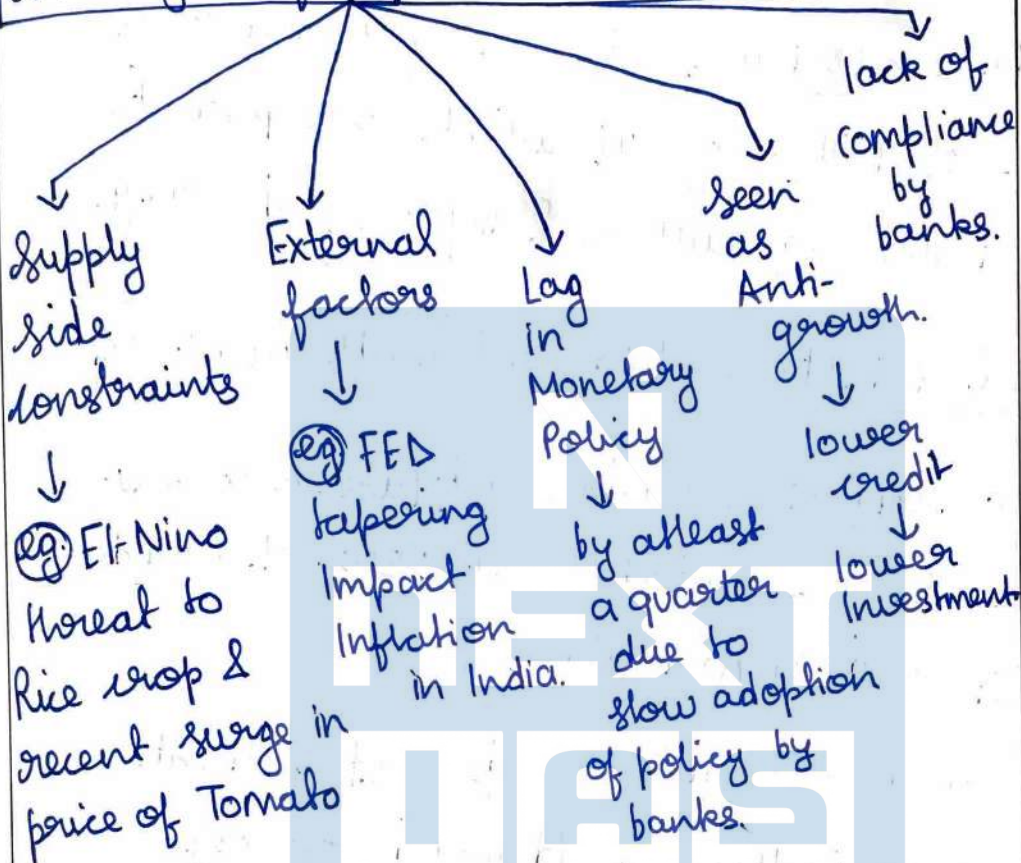
② Balance GDP growth with price stability (IMF  $\rightarrow$  India as bright spot  $\rightarrow$  6.5% prediction for GDP growth).

③ Save poor as inflation act as form of direct tax on poor (MDPI 2022  $\rightarrow$  22.8 crore poor people in India)

④ Enhanced Investor & Stock market confidence (Economic survey 2021-22 showcased level of Inflation & stock market relation)

⑤ Supplements fiscal policy of Government to ensure growth, low unemployment, etc

### Challenges of Inflation targeting



To increase effectiveness of Inflation targeting there is need of synergy between fiscal & monetary policy along with keeping external factors in mind.

Q.3

भारत में सतत कृषि को बढ़ावा देने और खाद्य सुरक्षा में सुधार के लिए मोटे अनाज उत्पादन की क्षमता का आकलन कीजिए।  
(150 शब्दों में उत्तर दीजिए) 10 अंक

Assess the potential of millet production in promoting sustainable agriculture and improving food security in India  
(Answer in 150 words) 10 Marks

Budget 2023-24 gave push to millet production (Shi-ana) in the international year of Millet by UN which can promote sustainable agriculture & improve food security.

Potential in Promoting Sustainable Agriculture

- ① Low Irrigation requirement (water conservation in the context that >80% of ground-water used by Agriculture).
- ② Drought resistant & hardy crop → climate smart Agriculture in dryland region where 40% families BPL.
- ③ Mixed farming → can be used as feedstock for livestock. Dalwai Committee recommended it for doubling farmer income.
- ④ Soil Health enhancement → belong to legume family thus help in nitrogen fixation.

⑤ Agriculture Intensity → Increased as it can be grown in off season (52% of NSA is rained)

### Improving food security

① Increased Agricultural production due to higher Intensity & Increase in gross sown area

② Nutritional security → can be Included in MDM & NFSA 2013

eg. Andhra Pradesh giving Til Laddu in Mid day Meals.

③ Demand from Food Processing sector → Ready for food items eg. Ragi Dosa.

④ Food security in Dry regions → Vidharba, Rayalseema, etc.

To further promote the millet production there is need of behavioural nudge, provision of quality seeds & farmer education.

Q.4

जल जीवन मिशन में पेयजल की उपलब्धता और पेयजल तक पहुँच में क्षेत्रीय विषमता को समाप्त करने का सामर्थ्य है। मिशन के महत्त्व पर प्रकाश डालते हुए, वांछित उद्देश्यों की प्राप्ति में अंतर्निहित बाधाओं पर चर्चा कीजिए।  
(150 शब्दों में उत्तर दीजिए) 10 अंक

Jal Jeevan Mission has the potential to end the regional disparity in the availability and accessibility of drinking water. Highlighting the significance of the mission, discuss the underlying impediments in achieving the desired objectives. (Answer in 150 words) 10 Marks

Jal Jeevan Mission was launched to provide 100% tap connection to all rural household by 2024 which was later extended to urban areas.

### Significance of JJM

- ↳ a) Achieving the objective of WASH to address issue of hygiene & malnutrition
- ↳ b) Women empowerment as they face burden of collecting water on daily basis
- ↳ c) Supplement the objectives of ODF under Swachh Bharat mission
- ↳ d) Construction of rural assets in form of Ponds, lakes, tanks, etc.
- ↳ e) Sustainable urbanisation by providing water supply to slum areas (SDG11)

## Impediments of JJM

- ① Rising water stress → Niti Aayog (1300 cubic meter per capita availability)
- ② Encroachment of water source (eg. Chennai Perambur wetland)
- ③ COVID-19 disruption lead to delay in completion & sanctioning of fund
- ④ Regional disparity as implemented by states (eg. only Goa & some hilly states able to provide 100% tap connection till date)
- ⑤ Non-utilisation of funds & fund diversion
- ⑥ Low focus on augmenting water sources leading to dry pipe connection

To ensure timely completion of projects there is need for convergence of JJM with Atal Bhujal Yojna, MGNREGA, Swachh Bharat Mission & also cooperation with state governments.

Q.5

बैटरी ऊर्जा भंडारण प्रणाली (बीईएसएस) से आप क्या समझते हैं? इसके अनुप्रयोगों पर चर्चा कीजिए और यह भारत के ऊर्जा कार्यक्रम में किस प्रकार क्रांतिकारी बदलाव ला सकता है। (150 शब्दों में उत्तर दीजिए) 10 अंक

What do you understand by Battery Energy Storage Systems (BESS)? Discuss its applications and how it can revolutionize the energy program of India. (Answer in 150 words) 10 Marks





Q.6

इसरो के गगनयान मिशन में हुए विकास और उपस्थित चुनौतियों पर संक्षिप्त चर्चा कीजिए। समाज के लिए मिशन के संभावित लाभ क्या हैं? (150 शब्दों में उत्तर दीजिए) 10 अंक

Discuss in brief developments and challenges in the Gaganyaan mission of ISRO. What are the possible benefits of the mission for the society? (Answer in 150 words) 10 Marks

Gaganyaan mission is human spaceflight mission of ISRO scheduled for 2024. It is the first space flight mission of India.

| Developments                                                                                                                                                                                                                                                                                                                                                                                     | Challenges                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>① Trial of Humanoid robot (Vyomitra).</p> <p>② Preparation of space module.</p> <div style="margin-left: 40px;"> <pre> graph TD     A[Preparation of space module] --&gt; B[Sleeping Pod]     A --&gt; C[Kitchen module]     A --&gt; D[workspace station] </pre> </div> <p>③ Training of 4 IAF officers in Russia</p> <p>④ GSLV-Mark stages</p> <p>⑤ Development of suitable space suits</p> | <p>① Adaptability of humans to space environment</p> <p>② Lack of previous experience</p> <p>③ Indigenous space modules</p> <p>④ Delay of project due to Chandrayan-2 partial success &amp; COVID-19 Pandemic</p> |

## Possible Benefits for Society

- ① It will spur the further technological innovation in country
- ② Act as Inspiration for young generation which will push them toward Space Sciences
- ③ Improve India's global image thus cooperation in other fields including economy
- ④ Will give boost to space sector in India through private investment creating employment generation.

Indian Space policy 2023 along with Inter planetary mission will help in growth of sector & to increase the share in \$350 billion space market.

Q.7

"जलवायु परिवर्तन और प्रदूषण से निपटने की हमारी खोज में हरित हाइड्रोजन एक सरल और जादुई समाधान हो सकता है"। भारत के राष्ट्रीय हरित हाइड्रोजन मिशन के आलोक में कथन का आलोचनात्मक विश्लेषण कीजिए।  
(150 शब्दों में उत्तर दीजिए) 10 अंक

"Green hydrogen can be the silver bullet in our quest to tackle climate change and pollution". Critically analyze the statement in light of India's National Green Hydrogen mission.  
(Answer in 150 words) 10 Marks

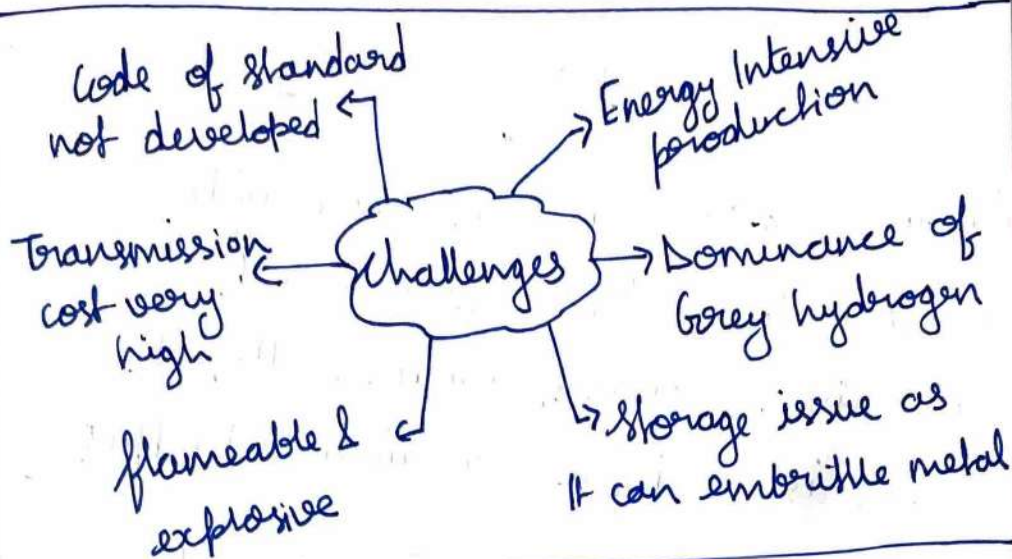
Budget 2023-24 had green growth as one of the component of Sapthishi. On the lines of that Green Hydrogen Mission was launched with outlay of Rs 19000 crore.

Silver Bullet in quest of tackling climate Change & Pollution

- ① Sustainable form of energy (clean & inexhaustible)
- ② Mitigate climate change & global warming
- ③ low emission/negligible emission of  $CO_2$ ,  $SO_2$ ,  $NO_x$ , PM pollutants

④ Decarbonising transport → Transport Minister said soon "cars will run on water" in India

⑤ Decarbonising Industries → steel, fertilizer & cement Industry.



### Government steps

- ① National Hydrogen energy board
- ② National Hydrogen energy roadmap
- ③ High level committee under Dr. K. Kashuri-rangan for Hydrogen & fuel cell
- ④ Mission Innovation
- ⑤ NTPC MoU with Ladakh to set up first green hydrogen mobility project
- ⑥ India H<sub>2</sub> Alliance

To further advance the progress in sector there is need for code of standards, R&D, develop safe & cost-effective solid state storage methods, etc.

Q.8

हाल ही में जोशीमठ, उत्तराखंड में आई आपदा के आलोक में, हिमालय क्षेत्र में आपदा प्रबंधन और पर्यावरण संरक्षण के लिए मुख्य सबक क्या हैं? (150 शब्दों में उत्तर दीजिए) 10 अंक

What are the key lessons for disaster management and environmental conservation in the Himalayan region, in light of the recent disaster in Joshimath, Uttarakhand? (Answer in 150 words) 10 Marks

Himalayan region is an eco-fragile region due to tectonic movement, changing river courses, glacier melts, etc. Thus there is need for sustainable development.

### Key lessons for Disaster management & environmental conservation

- ① Non-Disturbance to local land characteristics like slopes, drainage, etc.  
eg. Joshimath situated in unstable slope
- ② Low density of settlement complex to avoid heat island effect leading to cloudburst  
eg. Proliferation of Resorts, hotels, etc. in Kedarnath.
- ③ Avoidance of large scale construction project [Mishra committee report]
- ④ Sustainable tourism practices for waste management & ecological capacity

- (eg) blockage of drainage in Shimla due to waste generated by tourist
- ⑤ Community engagement both for development & environmental conservation
- (eg) Authorities faced difficulties in evacuation during Joshimath subsidence
- ⑥ Better use of technology like EWS, Satellite service like NISAR to detect land movement, etc.
- ⑦ Social & Agroforestry for land stabilisation and microclimate regulation
- ⑧ Hazard zonation & Risk mapping
- (eg) ISRO glacial lake atlas

There is need to balance ecological sustainability with development goal & strategic purpose in Himalayas to ensure sustainable development.

Q.9

"पंजाब में हालिया कट्टरपंथी रुझानों से पता चलता है कि खालिस्तान का मुद्दा अभी भी उबल रहा है।" हालिया घटनाक्रम के संबंध में कथन पर चर्चा कीजिए और इससे निपटने के उपाय सुझाएँ।

(150 शब्दों में उत्तर दीजिए) 10 अंक

"The recent radical trends in Punjab show that the Khalistan issue is still simmering." Discuss the statement with respect to recent developments and suggest measures to handle it.

(Answer in 150 words) 10 Marks

There has been spurt in Khalistan related violence both in India & abroad. Khalistan is an imaginary state seen as homeland and independent state for Sikhs which is not recognised by any country in the world.

### Reasons for Recent Radical trend

- ① Rise of radical leaders like Amarjitpal
- ② Linking the security action of Punjab Police with religious encroachment  
 eg) Radicalist often use Gurudwaras as safe heavens.
- ③ Social media & fake propaganda by foreign elements.
- ④ Agriculture stagnation in Punjab after Success of Green Revolution  
 eg) farmer disparity, soil degradation, etc

- ⑤ Role of Pakistan in creating disturbance in Punjab
- ⑥ Canada & UK harbouring radicalist on argument of freedom of speech & expression

### Required Measures

- ① Cooperation between Community leaders, Gurudwara & Security forces.
- ② Counter radicalisation & de-radicalisation of youths
- ③ Solving issue of drug problem which is often linked to extremism.
- ④ Cooperation with UK & Canada for extradition of culprits.
- ⑤ Strengthen Security Intelligence to predict any major event in advance.

PM Modi recently on eve of 75th years of India's Independence suggested  tackling separatist issues with sweetness of development

- Q.10 ड्रोन संचालन में आसानी और साथ ही इसके संचालक की अनामिता, भारत की सीमा सुरक्षा की चुनौतियों में वृद्धि करती है। विस्तारपूर्वक वर्णन कीजिए और सीमावर्ती क्षेत्रों में ड्रोन समस्या से निपटने के लिए सुझाव दीजिए।  
 (150 शब्दों में उत्तर दीजिए) 10 अंक

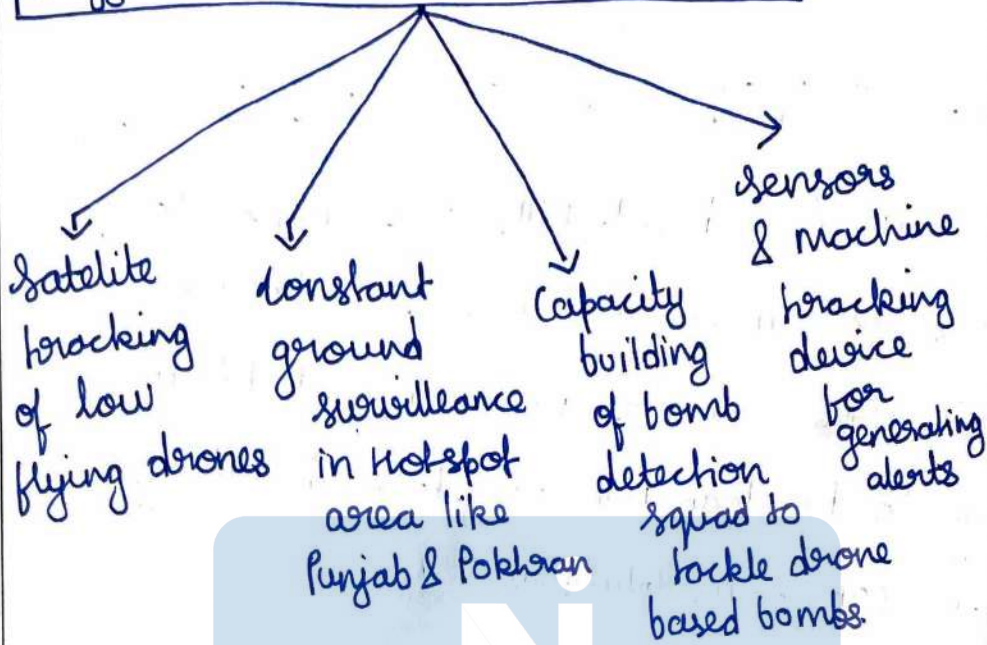
The anonymity and ease of drone operation contribute to the challenges of India's border security. Elaborate and give suggestions to tackle the drone problem in border areas.  
 (Answer in 150 words) 10 Marks

Recent attacks using drone near India-Pakistan border (URI attack) highlights increasing threat of drones to border security.

Anonymity & ease of operation contributing to challenge

- ① Used by Terrorist elements to plant a bomb or supply ammunition to over ground workers
- ② Used by states for cyber espionage
- ③ Organised crime network using it to smuggle drugs in Punjab
- ④ Low cost & non-traceability increases its attractiveness to use in warfare  
 eg Drone attacks on Moscow not traceable to sources.
- ⑤ Breach of defence air space & not tracked by satellites or air radar ~~sub~~ if flying at certain height

## Suggestions to tackle the problem.



To tackle the problems like drone attack, there is need to modernise border security Infrastructure & forces and also capacity building of border forces to identify & tackle such threats.

- Q.11 विद्युत संशोधन विधेयक, 2022 उपभोक्ताओं, डिस्कॉम के साथ-साथ पर्यावरण के लिए कई लाभ प्रस्तुत करता है। सविस्तार वर्णन कीजिए। साथ ही इसकी कमियों को भी सूचीबद्ध कीजिए और उन्हें दूर करने के लिए कुछ उपायों का भी सुझाव दीजिए।  
(250 शब्दों में उत्तर दीजिए) 15 अंक

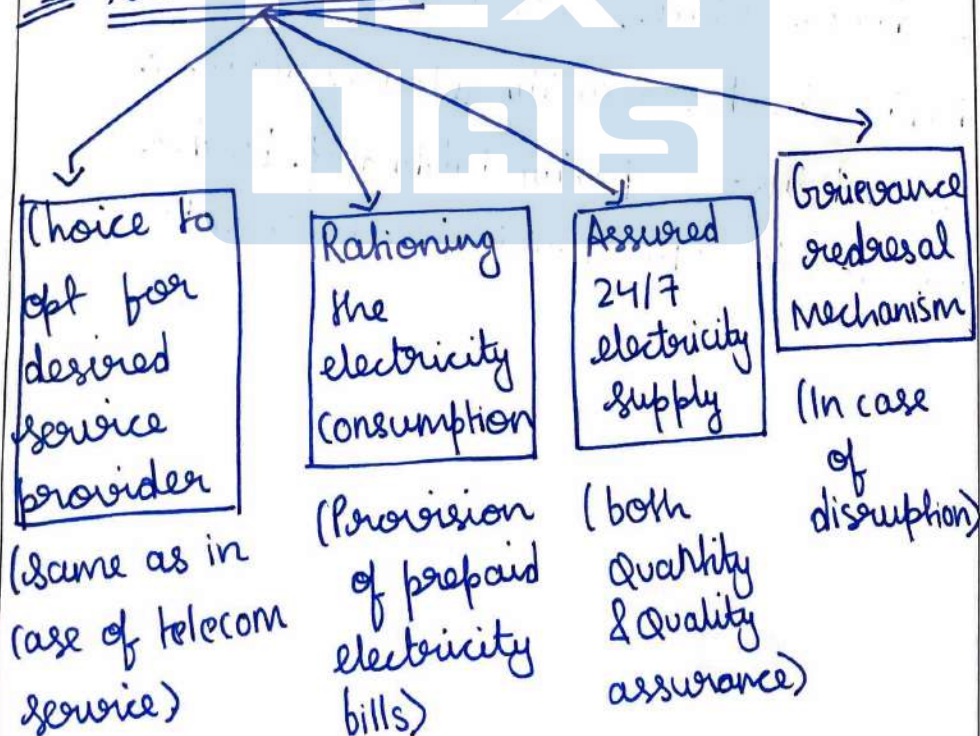
Electricity Amendment Bill, 2022 brings several advantages for consumers, DISCOMs as well as the environment. (Elaborate) Also, list out its shortcomings and suggest some measures to overcome them.

(Answer in 250 words) 15 Marks

Electricity Amendment Bill, 2022 aims to ensure consumer welfare & reform distribution sector by aligning electricity policy to Panchamitra target laid out by PM in COP 26 in Glasgow.

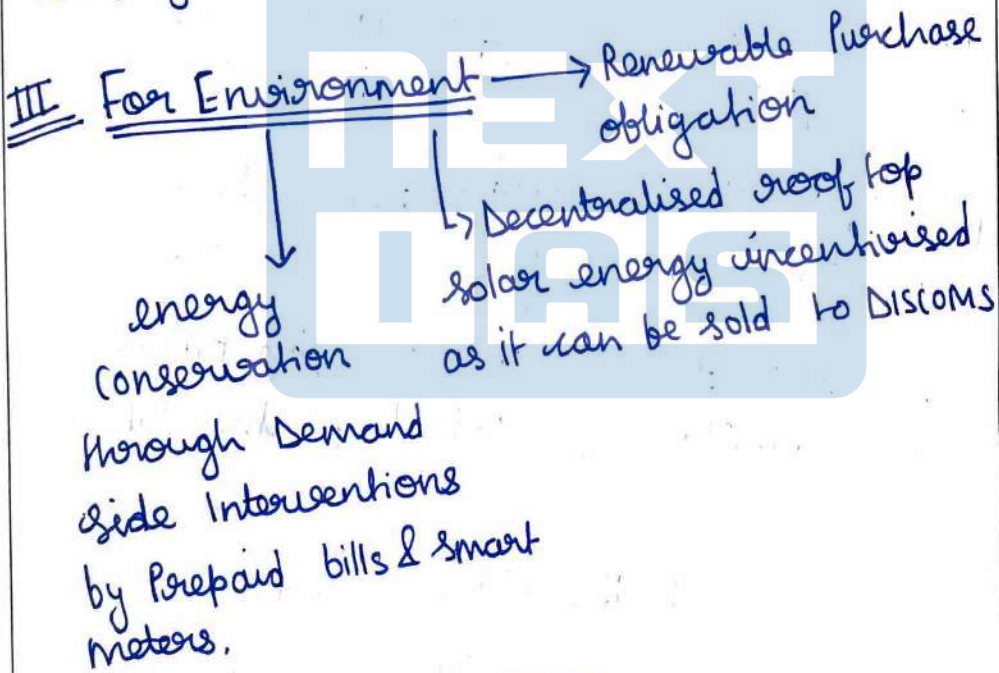
### Advantages of Electricity Amendment Bill 2022

#### I For Consumers



## II For Discoms

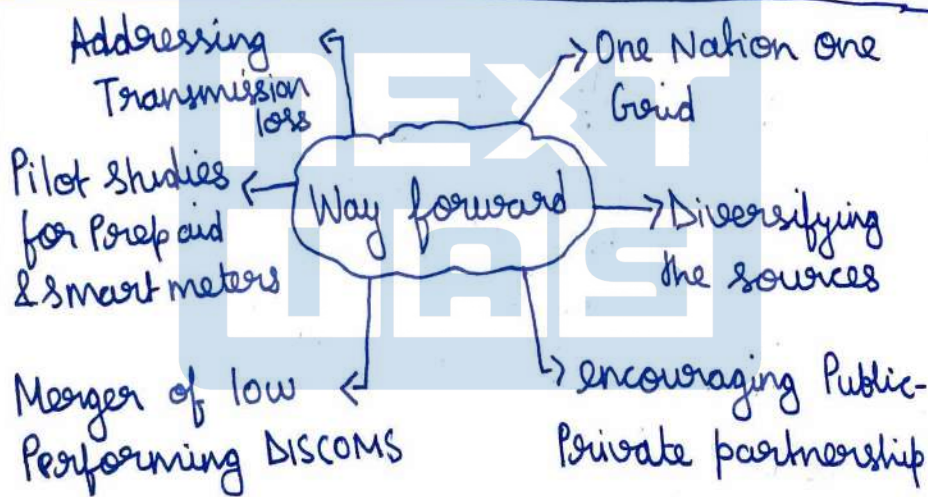
- a) Reduction in Power theft by Installation of Smart meters
- b) Provision for timely revision of tariffs
- c) Diversified sourcing of electricity by allowing purchase through other states
- d) Insolvency proceedings in case of delay in payments to GENCOS.



## Shortcomings of the Bill

- ① Does not address the existing issue of rising debt of DISCOMS despite UDAY scheme.

- ② Inter-state contracts for sourcing of electricity not clear
- ③ Lack of recourse & burden on DISCOM who are already suffering from high debts
- ④ Does not address the issue of Transmission loss from Grid
- ⑤ Does not mention other renewable sources like Hydrogen, biofuel, etc.



India with rising population & economy will see highest rise in energy demand (IEA) thus there is need for both capacity augmentation & energy transition

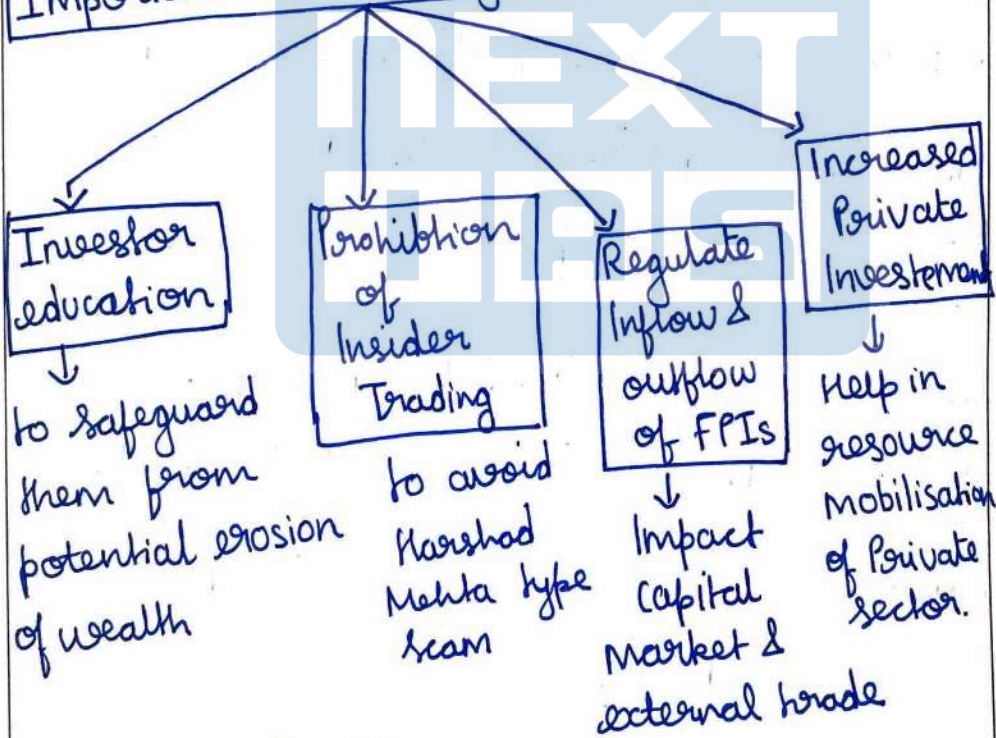
Q.12

भारतीय प्रतिभूति एवं विनियम बोर्ड (सेबी) शेयर बाजार के नियमन और निवेशकों के हितों की सुरक्षा में महत्वपूर्ण भूमिका निभाता है। दिये गए कथन के आलोक में, सेबी के समक्ष आने वाली चुनौतियों पर प्रकाश डालिए और इस संबंध में सुधारों का सुझाव दीजिये। (250 शब्दों में उत्तर दीजिए) 15 अंक

Securities and Exchange Board of India (SEBI) plays an important role in the regulation of the share market and safeguarding the interests of investors. In the light of given statement, highlight the challenges faced by the SEBI and suggest reforms in this regard. (Answer in 250 words) 15 Marks

SEBI was made statutory body in 1992 with rising stock market post LPG reforms so that it can function more independently with substantial penal powers.

### Important Role in regulation of Share market



Other Role

- Ensure timely payouts & clearings
- Identify any stock manipulation

## Challenges faced by SEBI

- ① Divided functions with RBI & Ministry of corporate affairs
- ② Failure to tackle or foresee issues like recent Hindenburg report related to Adani enterprises
- ③ Multiplicity of stock markets & crowdfunding sources.
- ④ Difficulty to ensure prohibition of insider trading as Companies Act 2013 does not explicitly mention corporate Governance.
- ⑤ External factors like FED tapering & outflow of FPI not within control of SEBI
- ⑥ P-Notes causing issue of round tripping & money laundering

## Suggested Reforms

- ① Use of AI, Machine learning & Big data

Analytics to identify any stock manipulation.

② strict enforcement of Independent director appointment mentioned under Companies Act 2013

③ Regulation of crowdfunding platforms

④ Due Diligence requirement for Investment in P-Notes

⑤ Encouraging regional stock markets to avoid creating institutions that are too big to fail.

Capital market development is significant for achieving double digit growth in India to become developed nation by 2047 as private Investment very crucial for growth which has dipped to 13% in 2022-23.

Q.13

भारतीय अर्थव्यवस्था में एक प्रमुख योगदानकर्ता होने के बावजूद, कृषि क्षेत्र कई बाधाओं से ग्रस्त है जो इसकी वृद्धि और विकास में बाधा डालते हैं। इन बाधाओं पर काबू पाने में प्रौद्योगिकी की भूमिका पर चर्चा कीजिए।  
(250 शब्दों में उत्तर दीजिए) 15 अंक

Despite being a major contributor to the Indian economy, the agriculture sector is plagued by several constraints that impede its growth and development. Discuss the role of technology in overcoming these constraints.  
(Answer in 250 words) 15 Marks

Agriculture sector contribute 18% of total GDP & 48% of total employment. It also provide 80% of total female employment in the country thus it play major role in growth & development.

- Several Constraints
- Land fragmentation (10th Agri. census → 1.08 hectare average, Nagaland (5 hectares) whereas Kerala (0.18 hectare)
  - Market Issues (Issue with APMC, CAG highlighted serious shortage of storage & 97% transport of perishable product through roads)
  - Ecological Issues (climate change & extreme events, declining intensity in Punjab, Haryana, etc due to soil degradation, lack of crop diversification)
  - lack of commercialisation (86% small & marginal farmers, No contract farming)
  - Other (low mechanisation, lack of access to credit, low technology adaptation, poor fertilizer use, low income (Rs 8736).

## Role of Technology in overcoming constraints

### ① ICT Initiatives / Technology

a) Agriculture extension services (eg. e-Sagu app for expert advice to small & marginal farmers)

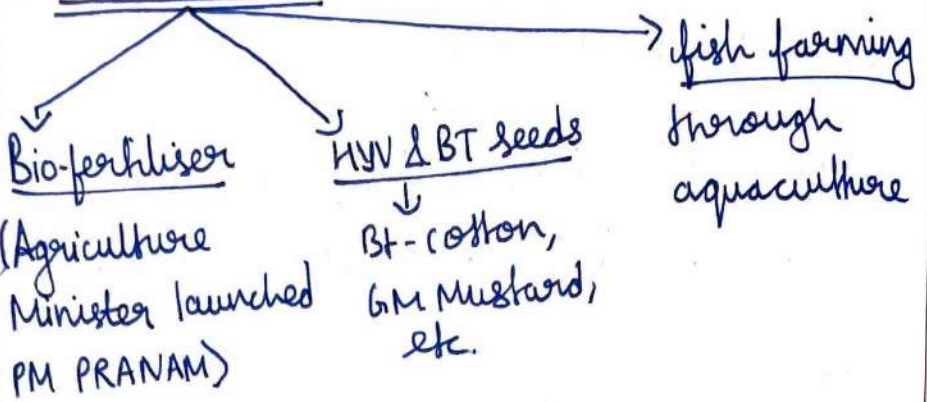
b) Information services → PLANTIX App for Pest & disease diagnosis  
Soil Health cards through drone survey for soil health  
M-Kisan App & Meghdoot by ICAR for weather forecasting

c) Marketing services → e-NAM, e-Choupal & Digital mandi for better price discovery & increasing customer base

② Artificial Intelligence → Supply chain management, predicting weather fluctuations, Informing on crop choices

③ Nanotechnology → Nano-Urea by IFSCO will help in increasing yield by decreasing Input (5ml bottle can replace 1 bag)

## ④ Biotechnology



## ⑤ Space technology

for crop acreage estimation through CAPE project

Budget 2023-24 launched Public Digital Infrastructure for agriculture which will boost startup & use of technology thus converting image of Indian "peasant" farming to Indian "entrepreneur" farming.

Q.14

पर्यावरण एवं प्राकृतिक संसाधनों पर सिंचाई के प्रभाव का मूल्यांकन कीजिए, और कृषि में सिंचाई पद्धतियों की संधारणीयता और समता सुनिश्चित करने के लिए उपाय सुझाएँ। (250 शब्दों में उत्तर दीजिए) 15 अंक

Evaluate the impact of irrigation on the environment and natural resources and suggest measures to ensure the sustainability and equity of irrigation practices in agriculture.

(Answer in 250 words) 15 Marks

According to 10th Agriculture census, 52% of Net Sown Area in India is irrigated which make Indian agriculture vulnerable to climate extreme in absence of adequate irrigation infrastructure.

### Impact of Irrigation on Environment & Natural Resources

| Positive Impact                                                                                                                                                                                                                                                   | Negative Impact                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>① Improve Agricultural productivity &amp; Production by elongating growing season.</p> <p>② Improve soil moisture thus avoid soil erosion</p> <p>③ Avoid desertification</p> <p>④ construction of local water sources like Ponds, tanks, small lakes, etc.</p> | <p>① Depleting Ground water</p> <p>According to CWC report of 2016, more than 50 m drop in Punjab's Malwa plain</p> <p>② Deforestation</p> <p>Large lift projects &amp; Multipurpose project</p> <p>(eg) Sardar Sarovar Dam</p> |

⑤ Regulate microclimate of the region.

⑥ Provide drinking water to local species

③ Soil Pollution

Soil salinisation & alkalinisation due to capillary action in North West India (Semi Arid region).

④ Gully erosion & Badland topography

Chambal badlands, Gujarat badlands due to excessive irrigation

⑤ Issues related to canal irrigation

Mosquito issue, ground water pollution due to unlined canal, etc.

eg Indira Gandhi canal & Sirhind canal

⑥ Crop & Social Inequality

↓  
Areas of good irrigation like Green Revolution belt

↓  
Wheat, rice, cotton, etc

whereas rainfed region grow less remunerative crops like coarse grain

↓  
Well farmers of eastern India  
Vs pump farmers of North West India.

## Suggested Measures

① Revival of traditional & Indigenous small sources

eg. Mission Kakitya of Telangana, Jal Yuktta Shiksha of Maharashtra

② Promotion of micro irrigation

eg. Long term irrigation fund, MI fund by NABARD, Per drop more crop

③ Watershed management Approach

eg. Neeranchal, PM Krishi Sinchalee Yojna

④ Rain water harvesting & augmenting new sources

eg. Catch the rain campaign, Khet ko Pani

⑤ Vidyanathan committee → fixing rates for water according to agroclimatic zones.

Economic survey 2020-21 advocated for shift from crop productivity to irrigation water productivity through use of technology & capacity building of institutions.

- Q.15 परमाणु ऊर्जा और अंतरिक्ष प्रौद्योगिकी के क्षेत्र में क्रमशः डॉ. होमी जहाँगीर भाभा और डॉ. विक्रम अंबालाल साराभाई के योगदान से भारत को रणनीतिक रूप से किस प्रकार लाभ हुआ? (250 शब्दों में उत्तर दीजिए) 15 अंक

How India benefitted strategically from the contributions of Dr. Homi Jehangir Bhabha and Dr. Vikram Ambalal Sarabhai in the fields of atomic energy and space technology respectively? (Answer in 250 words) 15 Marks

Today, 2% of total electricity generation comes from nuclear sources and also, India holds 2% share in global space market of \$350 billion.

Strategic benefits due to contributions of Dr Homi J. Bhabha

- ① Setting up of Bhabha Atomic research center in Mumbai
- ② 3-stage Nuclear reactor considering lack of uranium resources indigenously
- ③ Potential to achieve Energy Independence through expansion of Nuclear Energy which Homi-J-Bhabha dreamt of.  
(eg) 80% of oil & natural gas through Imports.

④ Bhabha convinced the then PM Indira Gandhi to launch operation smiling Buddha which made India 6th nuclear power in the world.

⑤ Homi-J. Bhabha also nurtured Vikram Sarabhai & APJ Abdul Kalam thus prepared future leader in Science & Technology of country.

### Contributions of Dr. Vikram Sarabhai

① Opened space research center in Ahmedabad

② Responsible for launch of India's first rocket from Thumba in Kerala

③ Set up ISRO in Bengaluru

④ Pioneer of making reach of Television possible to villages of India

⑤ Developed India's own communication satellites thus ensuring strategic autonomy during the era of cold war.

Due to their contributions  
today India is engaging with world not  
only economically & militarily but also  
through force of science & technology.

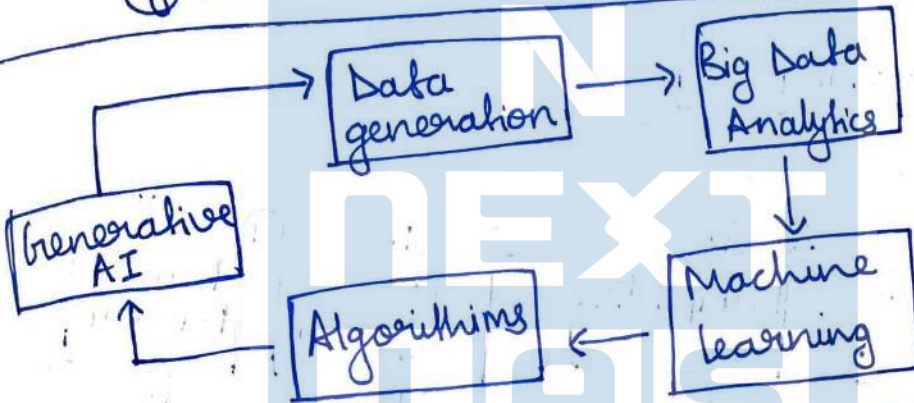


Q.16 जेनरेटिव एआई निकट भविष्य में नवाचार की सीमाओं को आगे बढ़ाने का सामर्थ्य रखता है, फिर भी इसका सामाजिक प्रभाव पर्याप्त चुनौतियाँ खड़ी करता है। सविस्तार उत्तर दीजिए। (250 शब्दों में उत्तर दीजिए) 15 अंक

Generative AI holds the potential to push the boundaries of innovation in the near future, yet its societal impact raises substantial challenges. Elaborate. (Answer in 250 words) 15 Marks

Generative AI is a system which generate texts, images, videos and audios like humans based on trained data set to give contextual & novel responses.

eg. Chat GPT, DALL-E, BARD, etc.



Potential to push the boundaries of Innovation

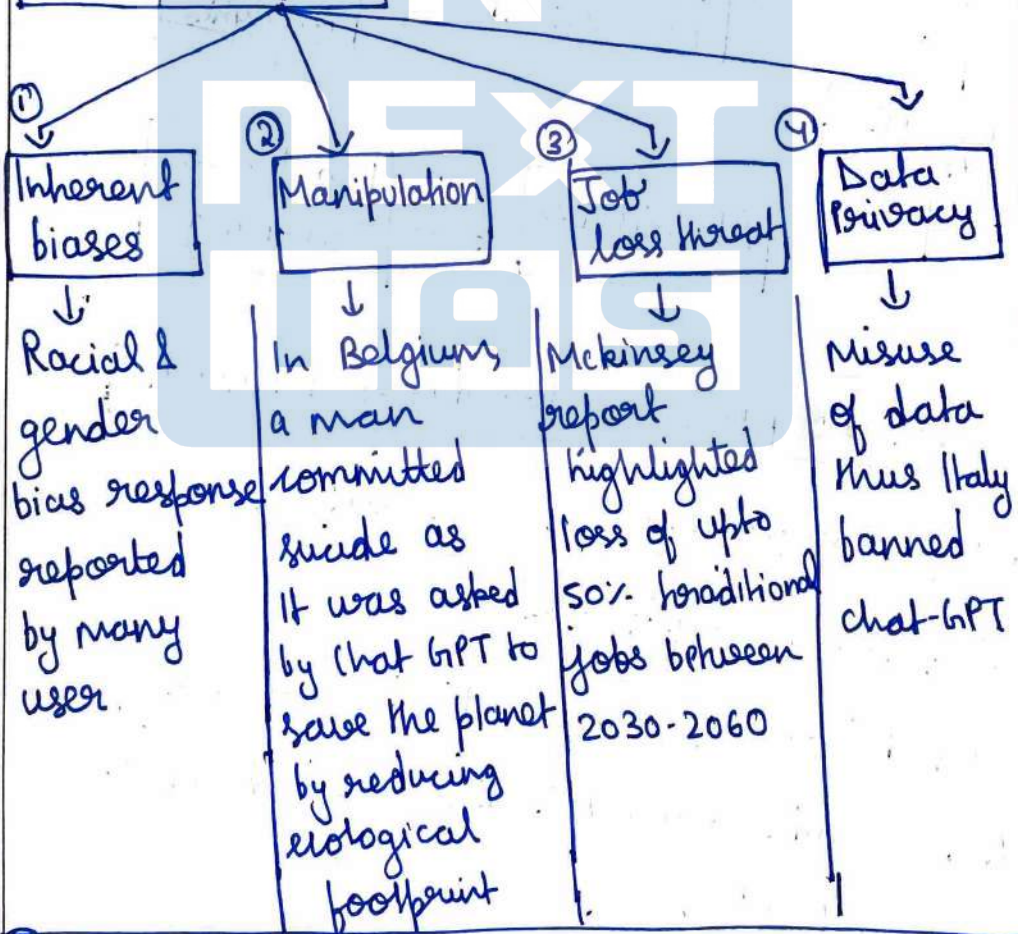
- ① Artistic expression → generation of music, film script, etc.
- ② Drug discovery & Personalised healthcare → USA & Canada using AI discovered drug to combat super bug
- ③ Personalised education → eg. NEP 2020 also talk about use of AI to ensure inclusive education.

④ Productivity Increase → writing legal documents, essays, emails, etc.

Mckinsey report said that it can increase productivity by 30%, raising global GDP by \$2-4 trillion annually.

⑤ Research & development → in fields like energy transition, IoT solutions, etc.

### Societal Impact



⑥ Cyber threat → phishing becoming sophisticated, identity theft, deep fakes, etc.

(eg) Henry Kissinger (ex-SOS of USA)

fooled by fake Zelensky to get crucial information.

### Way forward

- ① G7 proposed graded & threshold based regulation.
- ② UK PM Rishi Sunak advocated for creating global agency to licence new AI Generative companies
- ③ USA proposed cooperation for responsible use of AI
- ④ India in G20 proposed the idea of digital code of ethics & self regulation
- ⑤ Reskilling & upskilling to avoid job loss  
 (eg) Future skill prime by NAACOM & MeitY.

IT Minister R. Chandrashekar said that India will balance between regulation & innovation promotion to reap the benefit of generative AI for digital India.

- Q.17 नवंबर 2022 में मिस्र में COP27 संयुक्त राष्ट्र जलवायु परिवर्तन सम्मेलन में लॉन्च किये गए "जलवायु के लिए मैंग्रोव गठबंधन" के उद्देश्य को स्पष्ट कीजिए। उष्णकटिबंधीय देशों की तटीय पारिस्थितिकी को बनाए रखने में मैंग्रोव के महत्त्व पर विस्तार से प्रकाश डालिए। (250 शब्दों में उत्तर दीजिए) 15 अंक

Explain the purpose of the "Mangrove Alliance for Climate" launched at the COP27 UN Climate Change Conference in Egypt in November 2022. Elaborate on the importance of mangroves in maintaining the coastal ecology of tropical nations. (Answer in 250 words) 15 Marks

COP 27 held in Sharm-Al-Sheikh themed as "Together implementing the Paris Agreement" came in backdrop of recently released IPCC report which advocated for creation of blue-green infrastructure for mitigation.

Mangrove Alliance for climate-purpose

- ① Sharing best practices for augmenting & conservation of mangrove ecosystem.
- ② Cooperation & collaboration to conserve the ecosystem.
- ③ Engagement with local community, private sector, NGOs, etc to conserve mangroves.
- ④ Developing technological solutions & also promoting indigenous practices.

⑤ Incentivisation to tropical countries through integration of REDD mechanism & carbon market.

### Importance in maintaining Coastal Ecology

① land stability → avoid submergence & subsidence of delta & low-lying islands.

eg. According to World bank, 17% of coastal region of Bangladesh under threat.

② Ecosystem services → Regulate micro climate of the region, tourism, Habitat for species like fishing cat & Bengal tiger.



③ Disaster Resilience →

buffer against cyclones & Tsunami

eg. Cyclone Amphan

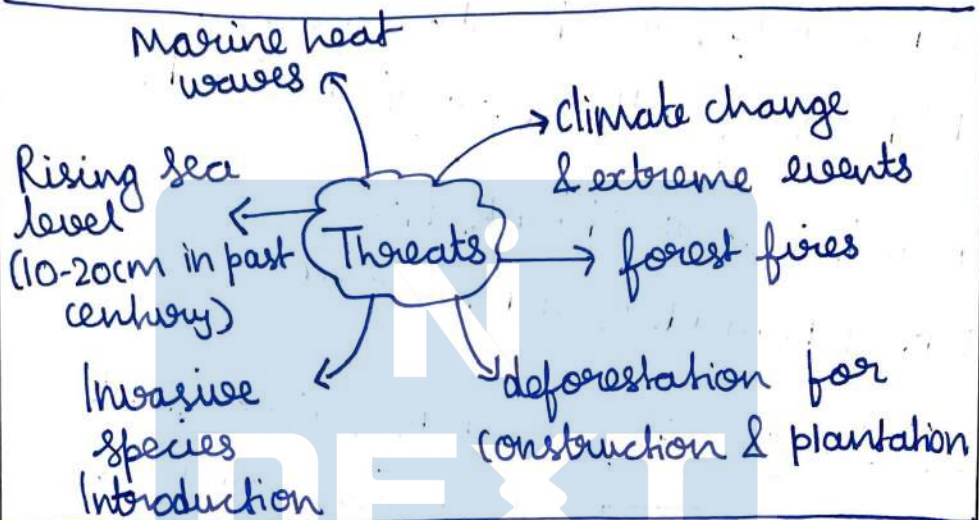
less impact on Kolkata.

④ Agriculture → stop salinity ingress due to storm surges as it absorbs the salt water through its roots

⑤ Conserve Sanchity of Groundwater → avoid seepage of saline water

⑥ Biodiversity maintenance → unique plant & animal species

eg. Avicenna, fishing cat, clouded leopard, saltwater mugger in Odisha



India to conserve mangrove ecosystem has taken steps like Amrit Dharohar, Marine Protected Area, CRZ notification, Integrated coastal zone management, etc.

Q.18

आपदा प्रतिरोधी बुनियादी ढाँचे के लिए गठबंधन का गठन भारत में आपदा प्रबंधन दृष्टिकोण को और अधिक मजबूती प्रदान करता है। टिप्पणी कीजिए। भारत में आपदाओं से निपटने के लिए एक नई रणनीति की आवश्यकता के औचित्य सिद्ध कीजिए। (250 शब्दों में उत्तर दीजिए) 15 अंक

The Formation of the Coalition for Disaster Resilient Infrastructure brings more robustness to the Disaster Management approach in India. Comment and justify the need for a new strategy to tackle Disasters in India. (Answer in 250 words) 15 Marks

Coalition for Disaster Resilient Infrastructure was launched by PM Modi in UN in 2019 to achieve the objective of SENDAI framework of Disaster risk reduction.

More Robustness to DM approach in India

① Conservation of Developmental gains by constructing resilient Infrastructure across all sector (NDMP 2016)

② Going one step beyond ensuring zero causality from extreme events

eg. Odisha after achieving zero causality now focussing on making energy Infra. underground to further mitigate loss from cyclones.

③ Inclusive disaster management approach

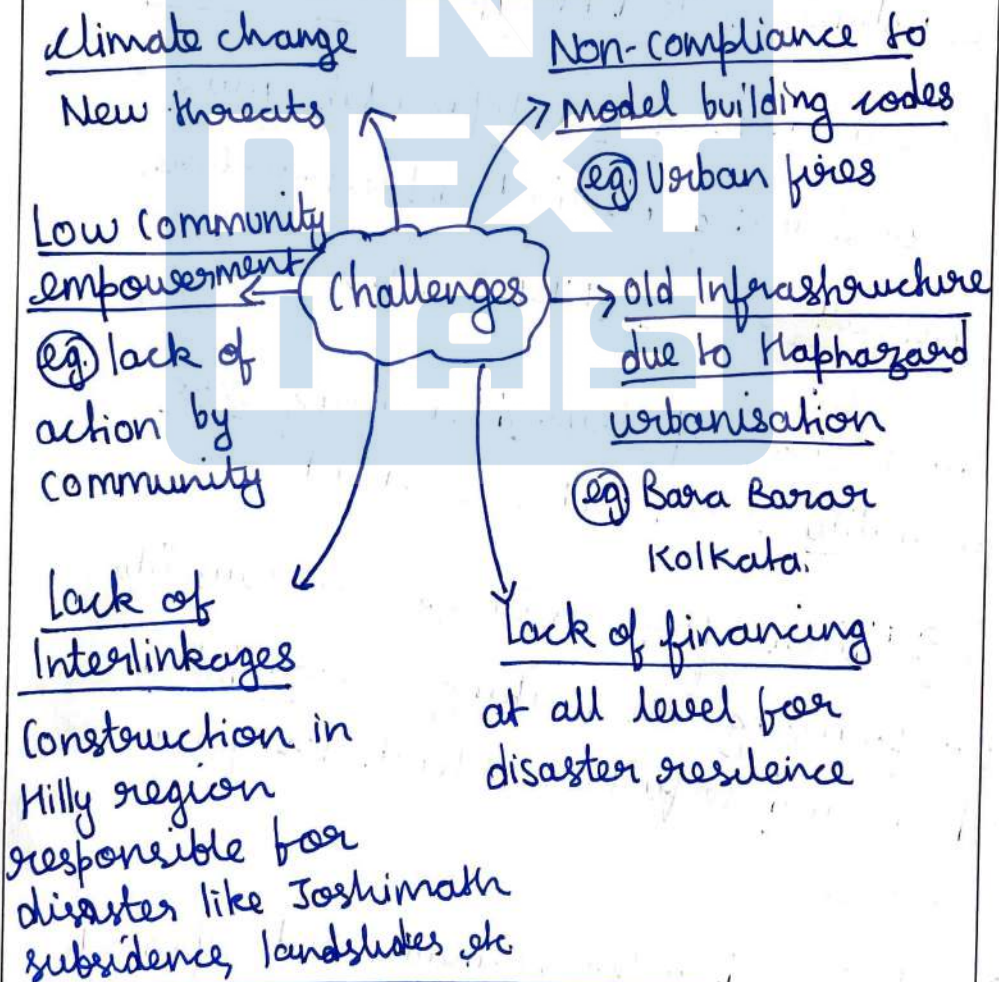
eg. Disabled friendly Infrastructure.

④ Retrofitting of existing Infrastructure  
to mitigate risk of earthquake

(eg) New Parliament building

⑤ Focus on blue & green Infrastructure

(eg) Ambit Sarovar Scheme focus on  
conservation of wetland & mangroves which  
act as natural buffer.



## Need for a new Strategy

- ① Climate change → Increasing frequency & Intensity of extreme events.  
 (eg.) Recent Delhi flooding despite being a semi-arid region
- ② Increasing Importance of Technology → EWS, Doppler radar, satellite monitoring of cyclones, etc.
- ③ Localised nature of disaster → require community involvement  
 (eg.) Apada Mitra
- ④ Rapid urbanisation → According to World bank, 531 million Indians will live in urban areas by 2030 >> Population of Europe
- ⑤ Inclusive & Sustainable Development → rising threat of floods & droughts impact agriculture & marginalised section more.

India need a proactive approach to DM with ensuring inclusivity, mitigation, response & quick rehabilitation through Build Back better.

- Q.19 महत्वपूर्ण बुनियादी ढाँचे (क्रिटिकल इंफ्रास्ट्रक्चर) और प्रमुख निगमों को लक्षित करने वाले रैंसमवेयर हमलों में हुई हालिया वृद्धि ने मजबूत साइबर सुरक्षा उपायों और नीतियों की तत्काल आवश्यकता पर प्रकाश डाला है। इस प्रवृत्ति में योगदान देने वाले प्रमुख कारकों पर चर्चा करते हुए, विभिन्न क्षेत्रों पर इन हमलों के प्रभाव का विश्लेषण कीजिए।  
(250 शब्दों में उत्तर दीजिए) 15 अंक

The recent rise in ransomware attacks targeting critical infrastructure and major corporations has highlighted the urgent need for stronger cybersecurity measures and policies. Discussing the key factors contributing to this trend, analyze the impact of these attacks on various sectors.

(Answer in 250 words) 15 Marks

According to NCRB report, there has been 118% increase in cyber attacks in the year 2020. India is among top 5 target in Asia Pacific region.



### Key factors contributing to this trend

- ① Digitalisation & Digital India → rising number of users, devices & application providing new opportunities to attack.
- ② COVID-19 Pandemic → weak security in

VPN network & work from home compromised crucial data.

③ Rise of organized cyber crime → sophisticated transboundary cyber criminal syndicates

④ Lack of Data Protection Law → complacency on part of corporation regarding data security make it vulnerable.

⑤ Modern Warfare → State using cyber warfare as proxy of full blown war

(eg) China hacking critical systems of Australia due to trade dispute

⑥ Other factors → global MNCs used as strategic weapon by countries (eg. Huawei), Ignorance of air-gap security to reduce cost.

⑦ Shortage of cyber security professionals → NASCOM estimate 56% shortage in large corporation.

### Impact on Various Sectors

① Financial Sector → Banking failures, stock manipulation, etc can threaten economic stability

- ② Health sector → Denial of service attack can cause health hazard, loss of medical data, etc.
- ③ IT & Software sector → decreased client confidence, IPR theft, etc.
- ④ Energy sector → Grid failure, power black outs having cascading effect on Industries
- ⑤ Security → attack on nuclear power plants, defence bases, etc.
- ⑥ Intelligence → Hacking of Government system (Mediant report 2023).

To tackle the menace, Government has taken several steps such as National cyber security policy 2013, CERT-IN, proposed data protection law, I4C, cyber Swachta Kendra, etc.

Q.20

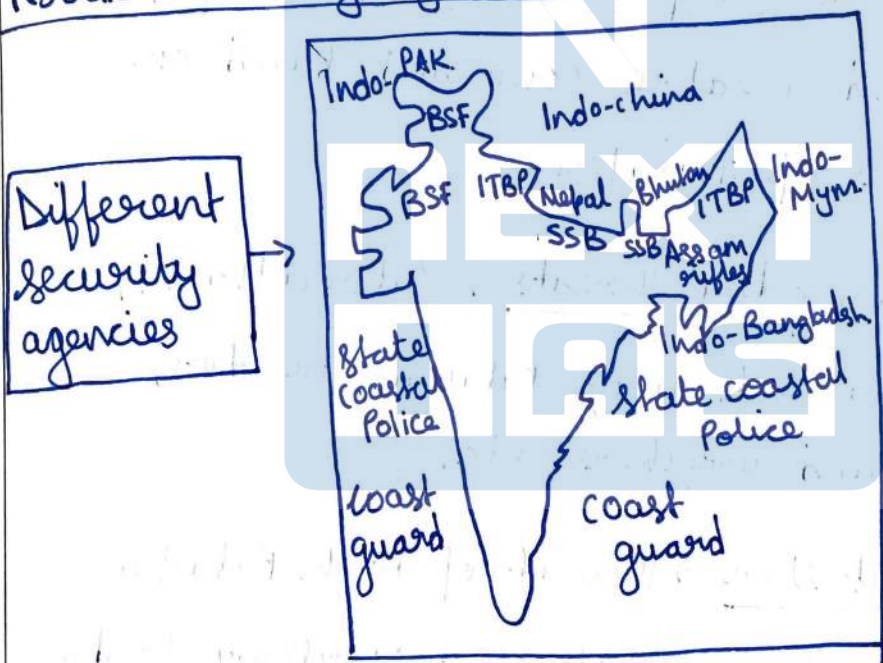
सीमा सुरक्षा के संदर्भ में, तटीय और स्थलीय सीमाओं के प्रभावी और कुशल प्रबंधन को सुनिश्चित करने के लिए विभिन्न सुरक्षा एजेंसियों के बीच सहयोग और समन्वय को कैसे बेहतर बनाया जा सकता है?

(250 शब्दों में उत्तर दीजिए) 15 अंक

In the context of border security, how can cooperation and coordination between different security agencies be improved to ensure effective and efficient management of coastal and terrestrial borders?

(Answer in 250 words) 15 Marks

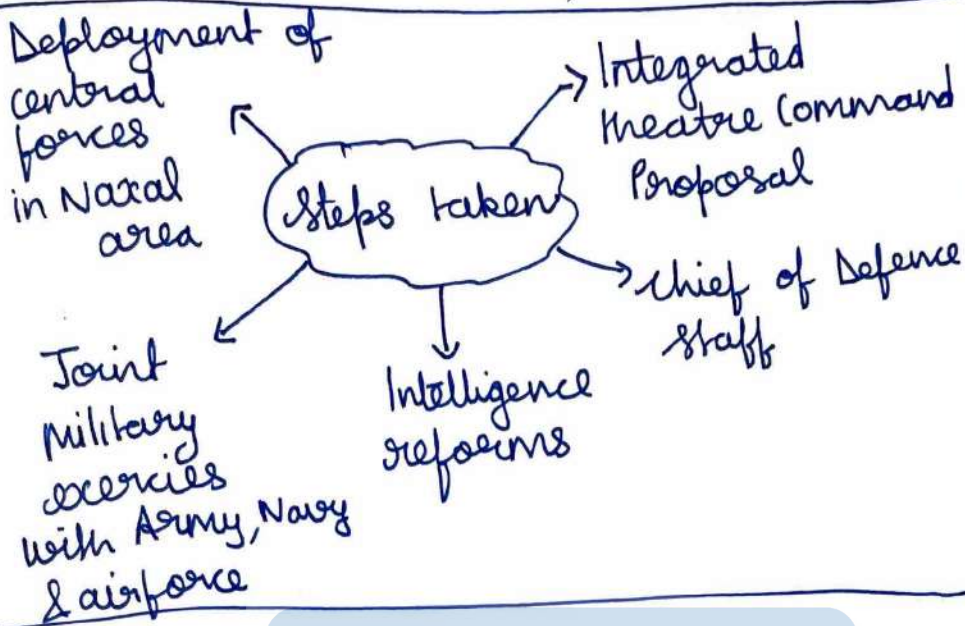
India has 13,162 km of land border & more than 7516 km of maritime border which require it to have robust border security framework to maintain territorial integrity & sovereignty.



Cooperation & coordination for effective & efficient management of borders

① Large areal extent of both terrestrial & maritime borders.

- ② Rerouting of crimes → (eg) Terrorist Incursion through Nepal, Human trafficking through Bangladesh border.
- ③ Rising Insurgency → require cooperation between BSF, Paramilitary forces like Assam rifles & state police in case of North East.
- ④ Resource use optimisation → Idea of Integrated theatre command, based on resource optimisation.
- ⑤ New & modern threats → cyber attacks, drones attack along Pakistan border, Over ground workers, etc.
- ⑥ 2 front War → threat of both Pakistan & China along western & Northern borders.
- ⑦ IOR becoming new theatre of Geopolitics → require cooperation between NAVY, coast guards & state police.



To further enhance the security architecture there is need to formulate National security doctrine along with Implementation of recommendation of Kargil Committee, D.B. Shekhar Committee and continuing with Defence Indigenisation.

Space for Rough Work

