# NEXT IAS

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(To be filled by candidate)

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**Roll No. :** PTTP220323

**Registration Number :** ..... **Date of Examination :** 16/8/23

**Exam Centre :** Old Rajinder Nagar ☑ Bhopal ☐ Online ☐

**Test - 3** **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.**

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**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. :** .....


NEXT
IAS

*(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

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### DONT'S

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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 "Canceiled" across it, otherwise it may be evaluated.
6. Handover your QCA Booklet personally to the invigilator before leaving the examination hall.

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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 tax on unanticipated gain in income through no additional effort ~~income~~ or expense.

This is designed to tax the the profits a company derives due to unprecedented events. (Eg) windfall taxes on crude oil due to Russia-Ukraine conflict.

Windfall Tax as measure to promote economic equality

1) In line with idea of progressive taxation i.e higher income attract higher tax.

2.) Tax thus collected can substantiate government spending on social sector

(Eg) During COVID-19, Government incurred

Candidates must not write on this margin

huge spending on social welfare mechanisms. Windfall tax can assist the government.

3) Increased Government budgetary tax collection can be used to increase capital expenditure. Act as multiplier effect. (eg) Niti Aayog ₹1 in capital expenditure gives ₹3-4 in return.

## Issues in Windfall Tax

1) Temporary nature as event declines profits decline to previous level.

2) May create future investment hurdles as investment may bring profit which can be taxed.

While windfall tax can augment government's effort on economic equality. However, in long term it need to follow FRBM act.

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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

The New Monetary Policy Committee regime came into effect via RBI Act 1934 in 2016.

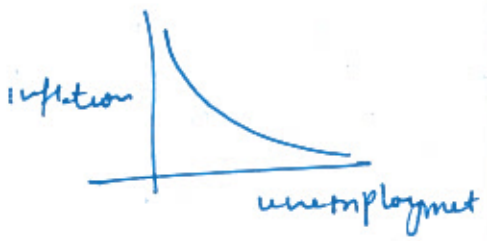
**Composition**: 6 members
- 3 RBI (including Governor)
- 3 government nominated

**Inflation Targeting**: within range of 4% ± 2% of CPI level

**Perceived Successes of Inflation Targeting**

1.) Since its implementation, target met except for 2021-22 fiscal year.

2) Inflation & unemployment relationship
- ↳ certain level of inflation necessary for economic growth & reduced unemployment



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3) Boosted investor's confidence.

4) Increased transparency in working

(Eg) Minutes of meeting released

## Challenges of implementing inflation Targeting

1) Addresses internal shocks. Not effective in case of external shocks

(Eg) Supply chain issue increases cost of crude oil.

2) Ineffective against Black swan events

(Eg) COVID-19, Russia-Ukraine war

3) High import dependency on energy requirments. (Eg) 85% of crude oil imported + imported inflation

4) Agricultural linkages weak → ↑ wastages

Despite its challenges, MPC have done commendable job in keeping inflation under target.

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Q.3 भारत में सतत् 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

Millets are known as supercrops due to their nutritional values and sustainability.

Potential of Millet production for sustainable agriculture

1) Hardy nature crop: require less water in currently rice-wheat system water guzzling

2) Short duration of growth: multiple crop production can be done. Increased farmer income.

3) Less dependent on fertilizers: lower input cost giving higher returns

4) Nature friendly: fixing microbes in soil improving quality.

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Potential of millet production in improving food security

1) Addressing micronutrients deficiency.

2) Low Glycemic index : healthy for diabetics patients.

3) Rich in fibre content

4) Rich in iron, calcium, magnesium.
   ↳ address issue of anaemia.

Challenges in millet production
- MSP regime : not included. Rice-wheat more favourable.
- Awareness : about benefits.
- Attitude : seen as poor man's crop
- availability of resources

Way forward
1) increased awareness about benefit
2) Food processing industries to procure millets
3) Availability of resources to farmers.

Declaration of 2023 as International millet year highlights its importance.

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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

Launched by Jal Shakti Ministry in 2019, the mission aims of supplying 55 litres of water per person per day to every rural household via functional tap by 2024.

**Significance of mission**

1) Upholding Right to access to water.

2) Upholding WASH by ensuring access to clean potable water.

3) Gender equality: functional tap can reduce women efforts of carrying water from long distances.

4) Improving health standards and reducing deaths related to unsafety water access.

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## Challenges of mission

1.) Fund availability as Covid-19 hit state and centre capacity.

2.) Slow speed of working of installation tap.

3.) Climate change affecting water availability.

4.) Awareness with respect to mission low.

## Way forward

1.) Augmenting funds via PPP method.

2.) using traditional methods to harvest rainwater

3.) Increasing awareness of benefits.

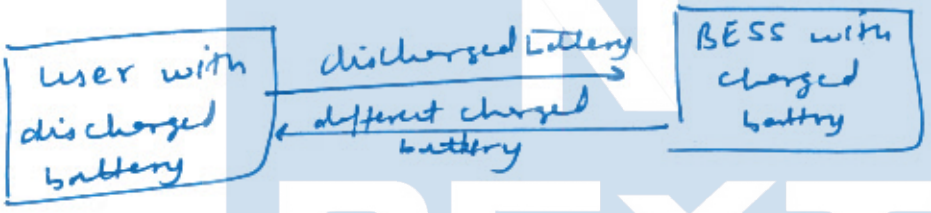
The recognition of WHO to the mission highlights its importance in achieving SDGs for India.

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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

Battery Energy storage systems refers to infrastructure that enables users to change battery at storage systems replacing discharged with charged one.




Applications of BESS

1) Can be used to support electric vehicles charging infrastructure.

2) Storing of renewable energy for long distance transfers

3) Reducing charging time and saving travelling time.

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## Potential to revolutionize

1) It can be used to push renewable energies.
2) It can reduce the need for charging station.
3) Plug and play model model.
4) Boost India's Panchamrits and Green Hydrogen.

## Challenges of BESS

1) Infrastructure development requiring time.
2) Technology with respect to Battery handling.
3) Issue of safety as Batteries prone to accidents being flammable.

For BESS to revolutionise energy program of India, Proper study on its potential and challenges need to be undertaken.

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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 of ISRO is its manned space mission demonstrating capability of ISRO in launch of manned missions.

**Developments so far**

1) 3 stage mission :
   1) unmanned flight
   2) Humanoid Vyommitra flight
   3) Manned crew flight

2) successful testing of crew module. successfully reentered the Earth's surface.

3) Training of selected 3 member crew jointly by IAF and Russia.

4) Developed Humanoid Vyommitra as part of 2nd stage of mission.

**Challenges in the mission**

1) Succesful launch and ensuring safe return of crew module.

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2) Protection of crew member from color radiations.

3) Development of habitable crew module.

## Possible Benefits of mission for the society

1) Increased scientific temper of society
   (Eg) Recent Chandrayaan 3 launch

2) Addressing question about space and human existence (Upanishad also talks about it)

3) Increased space investment can create more jobs and startups.

4) Future development of space tourism
   (Eg) Virgin galactica. It can act as recreational objective.

5) Exploration of fuel such as hydrogen, helium.

Therefore, Gaganyaan mission is crucial for India to make itself part of the growing space sector

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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

National Green Hydrogen Mission was announced to ensure 5 million metric tonne of Green hydrogen by 2030.

Green Hydrogen is produced through hydrolizing water molecule with the help of renewable energy.

Green Hydrogen as silver bullet to tackle climate change & pollution

1) Shift from grey hydrogen produced by fossil fuel combustion.

2) Negligible release of $CO_2$ in production

3) Hydrogen as cleaner fuel.

4) Augment India's Panchamita of 50% energy by renewable energy by 2030

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5) Support next gen cleaner fuel vehicles

(4) EV, hybrid EV – less pollution

## Challenges with Green Hydrogen

1) Storage infrastructure requirement huge.

2) Level of technology present not able to harness full potential

3) Dominance of grey hydrogen due to cost effectiveness.

4) Next gen vehicles upfront cost high.

5) Economic survey highlighted coal to be dominated fuel source due to abundant resource availability

Green hydrogen holds as promising solution to tackle climate change and pollution. Along with these India need to develop technology and invest in infrastructure development to reap its benefit

Candidates must not write on this margin

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

The Himalyan region constitutes one of the biodiversity hotspot of India. However recent disaster of Joshimath have highlighted the vulnerability of region.



Fig 1 : Extent of Himalya

**Key lessons for Disaster management**

1) Need for Hazard and vulnerability mapping

2) Essential to follow Environmental Impact Assessment in letter and spirit. (Eg) Hydropower plant construction

3) Use of Nature based solutions.

4) Local population need to be consulted while undergoing development process

5) Periodic check needs to be done of the project.

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## Key lessons for environmental conservation

1) Increasing global warming and climate change can lead to rise in extreme events (eg) Kedarnath flash floods 2013

2) ~~Afforestation~~ deforestation for construction can make soil free. Hence speeding land subsidence and landslide (eg) Joshimath.

3) Sustainable development instead of economic development.

4) Need to shift from anthrocentric to biocentric planning.

**Way forward**

1) Afforestation under National action plan for climate change

2) Following Panchamitra for reducing climate change

3) EIA to be undertaken compulsorily.

Himalayan region holds significant position. Hence need to be use sustainably.

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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

Khalistan issue is based on secessionist tendency which advocates independent State for Dal Khalsa.

Recent developments with respect to Khalistan issue

(A) Internally at Punjab

1) Rise of self proclaimed leader.

2) Active in secessionist groups and their meetings

3) Attack on police, disturbing law and order (eg) Rocket launcher attack on police station

4) Capturing of Amritpal after he took help from locals in hiding himself.

5) Radicalisation of youth.

(B) Internationally

Candidates must not write on this margin

1) Rise of Khalistan support Rallies (Eg) Canada.

2) Attack on Indian Embassies (Eg) UK

3) Mutual scuffle between Khalistan supporter and NRIs.

4) Support from international non actors to internal radical trends.

**Measures to handle the issue**

1) Strong stand against secessionist groups or speeches harming integrity of nation

2) Decreasing governance deficit in areas of radical trends

3) De radicalisation trends to be follow

4) use of ICT to track movement and ideas on social media.

5) International cooperation to punish attackers of Embassies.

The issue poses a threat to internal security and hence need to solved at priority basis.

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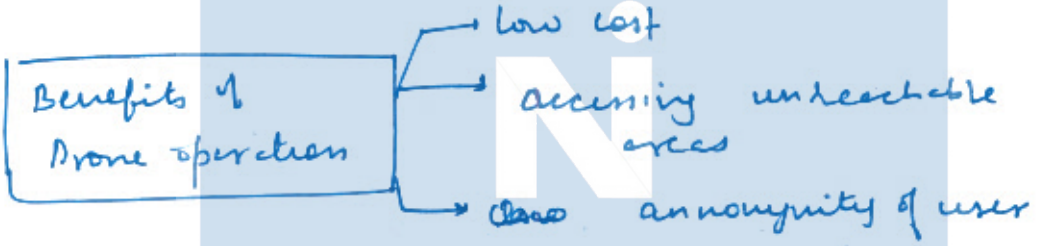
Q.10 ड्रोन संचालन में आसानी और साथ ही इसके संचालक की अनामिता, भारत की सीमा सुरक्षा की चुनौतियों में वृद्धि करती है। विस्तारपूर्वक वर्णन कीजिए और सीमावर्ती क्षेत्रों में ड्रोन समस्या से निपटने के लिए सुझाव दीजिए।

(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

Drones are unmanned aerial vehicles (UAV) that are controlled by pilot from ground control centres.




**Challenges posed by drone operation to India's Border security**

1) using drones for smuggling of arms and drugs.

2) use of drones for attack due to no loss of live compared to traditional methods (high reward v/s low cost)

(Eg) recent use of drone attack in Ukraine-Russia conflict.

Candidates must not write on this margin

3) Use of drone for surveillance and data gathering. (fig) can be used for pattern of border patrolling, use for infiltration

4) Use of drones for capturing image of strategic location and equipments.

5) Anonymity of drone operation makes difficult to trace origin of country.

## Suggestions to tackle drone problem

1) Use of drone catchers and signal jammers.

2) Shoot at sight orders.

3) Developing indigenous drones and training border forces in its operation.

4) Deploying IR and thermal cameras for nighttime surveillance.

Drone regulations of civil aviation ministry can act as guiding light for development of rule for border areas.

Candidates must not write on this margin

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

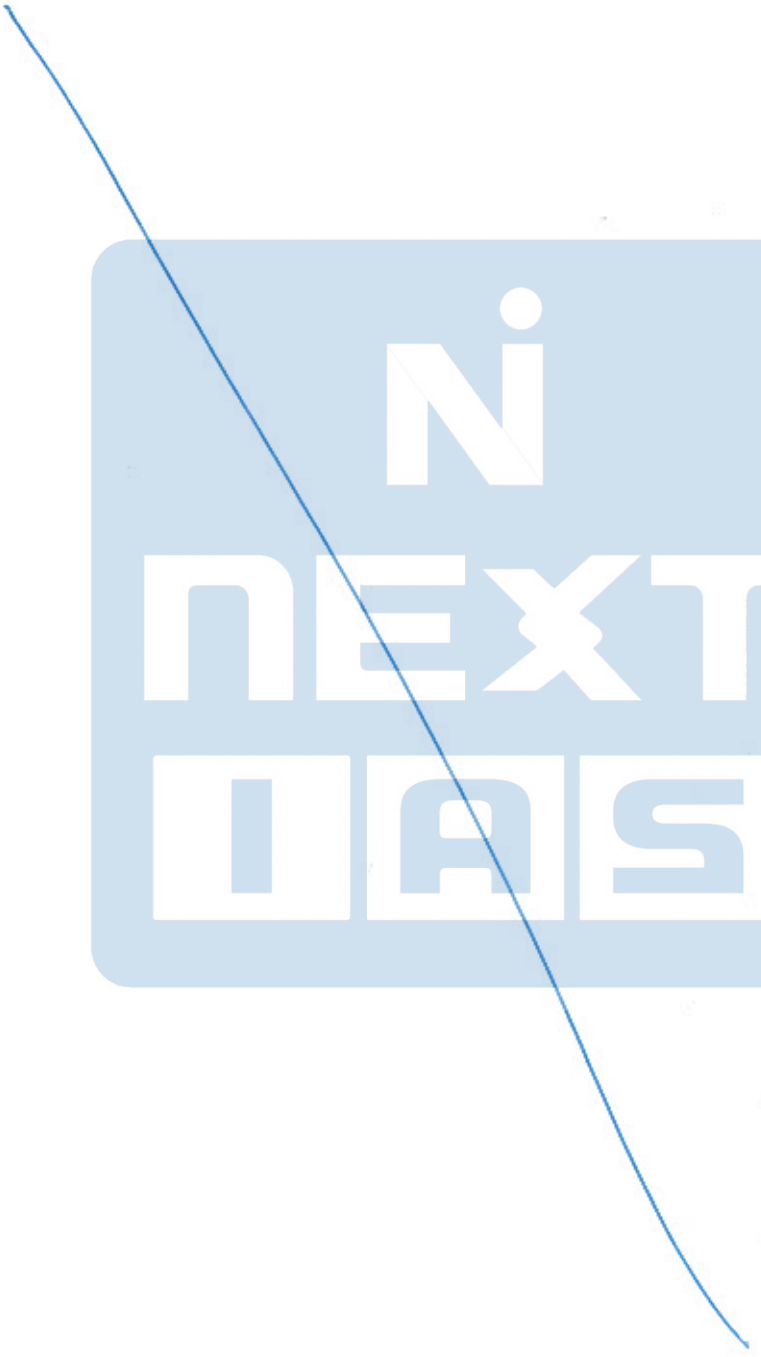
## Issues in electricity sector

1) loss during transmission
2) DISCOMs financial condition worse
   - huge NPAs
3) Issue of theft and illegal connections.
4) Grid development non uniform across state
5) Integration of renewable energy generated power

To address these issues Electricity Amendment Bill 2022 was brought

Key features
- Financial assistance to DISCOMs
- SMART meters
- choice of DISCOMs to user

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Candidates must not write on this margin



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Q.12 भारतीय प्रतिभूति एवं विनिमय 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 is regulatory authority of Indian share market. It was brought into existence by SEBI Act, 1992.

**Role of SEBI in regulation of share market and interest of investors**

1) Regulates share market.
2) Investor education and protection fund to safeguarding investor's interest
3) Keep a check on unfair practices
   (a) insider trading.
4) Conduct inquiries & impose penalties
5) Register and regulate venture capital funds.
6) Authority with Chairman to order search & seize operations

Candidates must not write on this margin

## Issues associated with SEBI

1) Rule enforcement far from perfect
   (Eg) insider trading still exists
2) Limited resources leading to slow enforcement.
3) Regulatory gaps and cooperation with other regulators.
4) Issue of cybersecurity and cyberattacks on NSE stocks.
5) Manipulation of stocks affecting market stability
6) Prevalance of Ponzi schemes shows limited SEBI campaigns success.
7) International collaboration as world financial market integrated, is low.

## Suggested Reforms

1) Improving resources of SEBI. Filling vacancies

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2) Unified financial regulator to address segmented financial market

3) use of technology to keep check on stock and data manipulation

4) Improving market intelligence for better enforcement

5) Attitudinal change in investors for better investment

6) Securities appellate tribunal need to be filled with human resources and dispose of case in time bound manner

A strengthened SEBI is important to uphold investor's trust and maintain financial market stability.

Candidates must not write on this margin

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 is considered backbone of Indian economy.

Agriculture as major contributor to Indian economy

1) 18.3% GVA contribution in 2022-23
2) Resiliency during Pandemic.
3) supports 48% of total population as per economic survey 2023
4) Supports Food Processing Industry and Textile Industry.
5) Contributes to exports earning via agricultural produce exports.

Constraints in Agricultural Sector

1) Decreasing soil fertility and increasing soil salinity.
2) Limited resources — 4% total land, 2% total water resources

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against rising population (17% of world)

3) Increasing input costs (eg) fertilizer price rise due to Russia-Ukraine conflict

4) Climate change affecting Monsoon.
   ↳ 2/3 of Agricultural land monsoon dependent.

5) Groundwater depletion due to rice-wheat system.

6) Lack of forward and backward linkages.

7) High post harvest loss (eg) ₹93000 crore as per Doubling committee

8) Market and APMC related issue of price discovery.

9) Low level of mechanisation.

10) Low water use efficiency and fertilizer use efficiency.

11) Land data and land boundary

## Role of Technology in overcoming constraints

1) use of sensors : for accurate water use
   1) efficiency
   2) interval use of fertilizer

Candidates must not write on this margin

2) use of drones : 1) keeping check on crops
2) actual attack of pest

3) use of Geospatial Data : 1) For weather Prediction and monsoon arrival

4) use of e-NAM : 1) better market access
2) better price discovery

5) use of Biotechnology : 1) modified seeds with better protection
2) GM crops for high yield

6) use of machines on farms : 1) increase productivity
2) reduce labour cost

7) use of nanotechnology : 1) nanofertilizer
2) nano sensors for moisture detection

8) use of precision farming : 1) increase water use efficiency.

9) use of land digitization : 1) for better data collection
2) reduced litigation

For technologies to succeed, challenges of affordability, availability and useability need to be ensured.

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**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

As per ICAR, 52% of net sown agricultural land is irrigated. Similarly, Central Water commission highlighted that 60% of total groundwater usage is for agricultural irrigation.

Popular irrigation methods
- dam
- canal
- flooding of fields
- use of onfarm pump for Ground water extraction

**Impact of irrigation on environment and natural resources**

1) Indiscriminate use leading to low water use efficiency.

2) Decreased ground water table leading to possible land subsidence.

3) Virtual water trade due to cultivation of rice and wheat (water guzzling crop)

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4) Increasing salinisation affecting soil quality.

5) Reduced water availability for non crop vegetation.

6) Decreasing water bodies such as lakes, rivers

7) Increased fossil fuel for electricity generation for ground water extraction.

8) Agricultural runoff leading to harmful algal blooms.

9) Unequal access and equity regional wise.

**Measures for sustainable and equitable irrigation practices**

1) use of precision farming for increasing water use efficiency

Candidates must not write on this margin

2) use of drip irrigation and sprinkler systems

3) Cultivation of hardy crops like millets

4) use of sensors to provide right amount and right place irrigation

5) Inter state river linkage programme. to ensure equity and prevent flooding.

6) Increasing awarenes about discriminate water usage.

7) Focusing on rainwater harvesting system to ensure less groundwater dependence.

8) credit acces to get affordable micro irrigation devices.

Sustainable agricultural irrigation is needed to ensure judicious usage of available water resource.

Candidates must not write on this margin

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

Dr Homi Jehangir Bhabha and Dr Vikram Ambalal Sarabhai are two stalworts in Indian scientific fields whose contribution have helped India.

**Strategic benefit of Dr Vikram Sarabhai**

1) Initiation of space sector by establishing ISRO.

2) Launch of space mission
   - Eg) Mangalyaan
     Chandrayaan

3) International cooperation in space technologies
   - Eg) Aditya L1 : US helping
     NISAR : ISRO + NASA
     Gaganyaan : Russia helping

4) Ensuring India's presence in growing space sector.

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d) use of space data for societal benefit.

e) IOL and startups increasing in space sector.

f) security of nation (eg) NAVIC, RISAT

g) use of Geospatial data for resource management, climate change, disaster management.

(1) Regional cooperation by leveraging NAVIC.

**Strategic Benefit of Dr Homi Bhabha**

1) Establishment of department of nuclear technology

2) Initiation of 3-stage nuclear plant

3) Collaboration for civil use of nuclear technologies
   (eg) India-US, 2010
   India-Russia

4) development of nuclear capability arms arsenal.

Candidates must not write on this margin

5) Leveraging rich thorium resources for energy production

6) Regional cooperation

(e.g.) India Russia developing Bangladesh Nuclear plant

7) Increasing international status of India as peaceful use of nuclear nation

8.) Security aspect with respect to nuclear states - China & Pakistan.

Therefore, these 2 contributed immensely to the growth story of India and act as source of inspiration for generation to come

Candidates must not write on this margin

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

Genreative 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 represents next generation AI capable of generating response from input provided.

Eg of Generative AI : Chat GPT-4
BARD, DALL-E

Generative AI can produce results in the same format as input.

Potential of Generative AI to push innovation boundaries

1) In the field of creativity

↳ It can be used to produce music, art and literature akin to famous icons of past.

Eg AI making music in voice of Michael Jackson.

2) Can increase productivity of humans

↳ repetitive tasks can be given to

Candidates must not write on this margin

AI which can do it in shorter time period

3) In automobile sector it can be used for designing and simulation of cars and machines.

4) Climate modelling and predicting future $CO_2$ level.

5) As per Lancet, Generative AI can help in understanding Protein structure of DNA. can be used for medicine development or finding underlying causes.

6) Education sector can be made more interactive via use of chatbots, generative personalised curriculum.

7) Governance grievance redressal mechanism can benefit from generative AI for faster resolution.

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## Challenges of Generative AI

1.) Intellectual property rights issue
   (eg) use of singer's voice to create music without his knowledge.

2.) Lack of creativity as AI can produce on its own

3.) Plagiarism can rise in schools, colleges.

4.) Job loss possibility as highlighted by NASSCOM.

5.) Access to AI depends on resources. Can increase class inequality

6.) Issue of data privacy and racial profiling Can affect individual rights.

7.) No oversight regulatory mechanism

While Generative AI holds promising future, there is a need to address its challenges - Technology needs to augment human capacity and not replace them.

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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

Mangrove alliance for Climate change was launched with the purpose to ensure protection of mangroves, ensure sustainable use and spread awareness with respect to benefits of mangroves in maintaining Climate change.

Mangrove represent plant vegetation tolerant to saline water condition.

Importance of Mangroves in maintaining coastal ecology of tropical nations

1) support high level of biodiversity and variety of species.



Fig: extent of mangroves in India.

2) Prevent ingress of salt water into

Candidates must not write on this margin

mainland territory.

3.) Act as storm surges against extreme climate events.

4.) Capture $CO_2$ reducing global warming.

5) Zone of restore with rich nutrients.

6) Coastal soil erosion prevention.

7) Challenges to Mangroves.

1.) Increased cultivation activities leading to deforestation of mangroves.

2) Shrimp cultivation affecting balance.

3.) Increased extreme events like cyclone and tidal flows destroying mangroves.

4.) Increasing salinity and ocean water temperature.

5) Agricultural runoff leading to harmful algal bloom. Reducing oxygen available

Candidates must not write on this margin

1) Increased plastic pollution due to increased tourism.

## Ways to address challenges

1) Afforestation of mangroves

2) Increased awareness about impact on mangroves of human activities.

2) Regulating shrimp cultivation and tourism.

4) Ensuring coastal zone regulations followed

5) Regulating climate change and global warming.

6) Creating infrastructure to protect mangroves from cyclone and tsunami

The recent MISHTI Scheme in Budget 2023-24 is step in the right direction.

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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 (CDRI) is an international global partnership and private agencies to increase resilience of infrastructure to climate and disaster risks.

Launched in 2019

CDRI as bringing more robustness to Disaster management Approach

1.) Increased International partnerships

2.) Increased access to funds and best practices for disaster management

3.) Global approach shift from isolated approach.

4.) Involvement of Global Private agencies can ensure better technologies to make resilient infrastructure

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## Need for new strategy to tackle Disasters in India

1) Disaster Management Act based on 2005 data.

2) Non inclusion of newer disasters

(Eg) lightning despite claiming lives not included as disaster by NDMA

3) Global level disaster reasons cannot be solved in isolated manner.

4) Need for centre-state cooperation to ensure better disaster management

5) Increasing occurrence of disasters despite NDMA act.

(Eg) cyclone - Bijarjoy, Tauktae
Landslides in Himachal & Uttrakhand

6) Need for global cooperation on issues based on global reasons

(Eg) increasing global warming linked to rising cyclone

Candidates must not write on this margin

(7) Access to funds and technologies
to need to involve private agencies

(8) updating techniques and increasing use of technology.

(9) Focusing on resilient infrastructure for sustainable development

(10) Increasing NDRF capacity.

(11) Increasing awareness about relief in local level government as first responders.

(12) use of civil society and NGO for rehab and beneficiary identification

(13) using new technology for updating vulnerability mapping

(14) addressing ecological disasters.

Therefore, to address emerging challenges of disaster India needs new strategy.

Candidates must not write on this margin

Q.19 महत्त्वपूर्ण 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

The recent ransomware attack on AIIMS have highlighted the need for stronger cybersecurity measures and polices

**Factors for rising ransomware attacks**

1) Increasing digital infrastructure makes it easy to target.
2) use by non-state actor for monetary gains.
3) Emergence of blockchain technology and cryptocurrency making anonymous ransom possible.
4) use by State actors to destabilize other nations (eg) Mumbai Grid attack by chinese hackers
5) low awarenes

**Impact of these attacks on various sectors**

1) Economic impact

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- Loss of working resources and time
- Loss of confidential data
- low cybersecurity framework affect investment

2) Social impact

- Loss of personal data
- disturbance in accessing services
  - (Eg) AIIMS attack led to reduced services
- Loss of income leading to financial crisis

3) Political impact & strategic impact

- reduced confidence on government
- loss of strategic data of importance
- challenging sovereignty of state

**Cybersecurity measures and policies needed**

1) Defining cyberattacks, ransomware attacks.

2) Updating IT act, 2000 to include provision with respect to cyberspace

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3) Creating workforce trained in cyber security as per National cybersecurity Policy 2013

4) Increased awareness about data hygiene

5) PPP investment in developing infra.

6) Implementing data protection Act.

7) Mandatory reporting of Cyberattacks to authorities.

8) Devices with digital access need to be cybersecure.

9) Best state practices like Kerala cyberdome need to be promoted nationwide.

With emergence of cyberspace as 4th dimension of warfare. A strong cybersecurity framework is sine qua non.

Candidates must not write on this margin

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 have 15000 km land border and 7500 km coasted border. Having huge and varying nature of borders makes Coperation and coordination between different security agencies important.

Current issues

(A) Land borders

1) multiplicity of forces along borders

(eg) BSF - Pakistan
SSB - Nepal, Bhutan
Army - LAC, LOC

2) Different forces under Different ministries

(eg) Central Armed Police Forces (CAPF) : Ministry of Home Affairs

Army : Ministry of Defence

3) Conflict between State police and CAPF

(eg) Law & order - State subject
recent amendments increased jurisdiction of BSF

Candidates must not write on this margin

(B) Maritime Security

1) Multiple forces { State, Coast guard, Navy }

2) concurrent jurisdiction of water bodies.

## Benefit of cooperation and coordination

1) Efficient use of resources available.

2) Reduced dual efforts on same objective.

3) Better management of personnels.

4) Increased synergies between agencies leading to better cooperation.

5) Streamlined approach against adhoc approach in case of threat perception.

6) Better centre-state relation - cooperative federalism increasing security of state and nation.

Candidates must not write on this margin

7) Uniformity in approach against adverse neighbours

(Eg) same border security approach against Pakistan - Current BSF+ Army

8) Better data sharing and best practices sharing.

**Challenges in operation and coordination**

1.) with respect to commanding authority.

2) Unequal resources and personnel.

3) Lack of training and experience in this approach

**Way forward**

1) theatrization of command

2) Implementing recommendation of Shekatkar committee

3) Training and data sharing

With evolving nature of warfare India needs to move from piecemeal approach to integrated approach

Candidates must not write on this margin

## Space for Rough Work

NEXT IAS