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# NEXT IAS

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(To be filled by candidate)

Name of Candidate : GAURAV SINGHAL

Roll No. : PTTP 220235

Registration Number : ..... Date of Examination : 14/08/23

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.**

**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.

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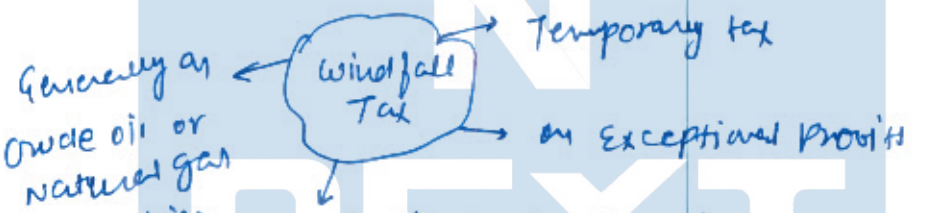
Q.1 अप्रत्याशित कर (विंडफॉल टैक्स) से आप क्या समझते हैं? क्या आपको लगता है कि अप्रत्याशित करों से संपदा का प्रभावी ढंग से पुनर्वितरण हो सकता है और अधिक आर्थिक समानता को बढ़ावा मिल सकता है?

(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 levied as ^the exceptional or by the Govt.
very high economic gains earned by a company due to some unforseen incident like Natural disaster or Global disruptions.




**Role of windfall tax in redistributing wealth & gen Equality**

1. Controls the accumulation of wealth in hands of Corporates only ⇒ by distributing it to public through social Expenditure
   Eg. Creation of Employment or Infrastructure Projects
2. Redistribution results into loss of inequalities
   (Eg.) OXFAM report: 1% wealthiest of India holds more than 50% of wealth.

Candidates must not write on this margin

3. Reduces the Government's fiscal deficit → Which in turn used for generating social infrastructure like health facilities and schools.

4. Reduces poverty → by implementing schemes like MGNREGA and PM KISAN through funds collected by windfall Tax

5. Fosters the development of MSME and small industries

However, it has certain challenges

1. Deters the investment and innovation by the corporates into the business
2. Against the Principle of Capitalism which motivates companies to grow
3. Government may use those fund as revenue Expenditure like ~~free~~ loan waiver & freebies which is a temporary measure.

windfall tax is result of unforeseen event which should be regulated and harnessed by taking all stakeholders into decision making such as rate of tax and which companies need to be taxed.

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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

Inflation targeting with motive of Economic growth was set by Urjit Patel Committee recommendations which formed a Maretary policy Committee for periodic review of Inflation and taking Corrective Actions.

~~Success of the System~~

Successes of the System

(1) Mofory has been successful to achieve the set target of Inflation 4% ± 2% from 2016, Except some unforeseen situations like covid.

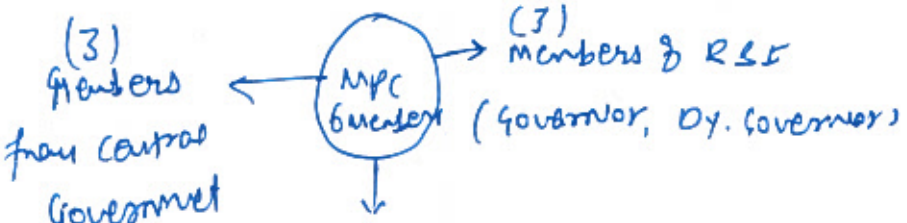
(2) Growth and Inflation have been balanced successfully. (Eg.) India despite having Inflation suppress measures recorded the growth rate of around 7%. in FY 2022-23.

(3) Increased transparency in monetary policy

Eg. Monetary policy minutes

Candidates must not write on this margin

(4) Increased Cooperation and Coordination between Central government and RBI on policy matters.




Decision by majority

## Challenges

(1) less flexibility in the targets ⇒ (4% ± 2%)

(2) Coercive policies to maintain inflation hampers the economic growth. Eg. Contractionary/Expansionary policies of RBI

(3) Conflict between the Central government and RBI members on policy decisions

(4) Difficult to strike a balance between inflation targetting and Economic growth.

MPC regime has been successful to achieve the inflation targets and maintaing the economic growth. steps like more flexibility in target can be a way forward.

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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

India is the largest Producer of millets in the world with more than 50.5 million Tonnes. It grows 20% of Asia's millets production.




## Role of Millets in Promoting sustainable Agriculture

1. Drought Resistant crop → can grow in low water availability areas like in Semi Arid region of Rajasthan so, promotes water Conservation
2. Can grow in Poor soil → also helps in Increasing the fertility of soil
3. Less Pollution unlike Rice wheat system → Emission of Methane is less
4. Less input Cost
5. Highly Remunerative for small farmers which accounts for 86% of total farmers

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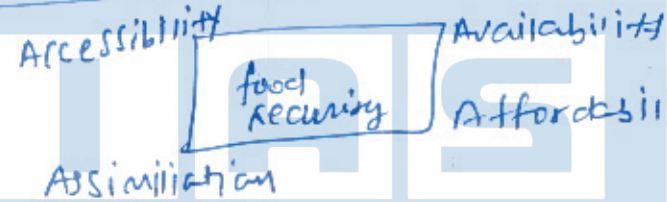
## Role in improving food security

1. Per hectare millet production is higher than the Rice crop system. (productivity is high)
[ > 2200 kg / hectare ]

2. High Nutritional Nature ⇒ provide food & nutritional security (Eg.) inclusion in NFSA and mid day meal scheme

3. Can thrive to grow in dry areas ⇒ provides food security to climate ridden regions like Desert areas & Rajasthan

4. Meets all 4 criterias of food security




~~challenges~~

Steps taken

- International year of millet 2023 by UNGA
- Initiative for nutritional security through Millet Prods
- Shri Anna (Budget 2023)
- Indian Institute of Millet Research

millets will help to meet SDG 1, 2, 3 and to double the farmers income by 2025.

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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

Jal Jeevan mission was launched to provide tap water facility at every rural household by 2024.




Significance of Jal Jeevan Mission

(1) Ensure tap Potable water at every household
Eg. More than 21.2 million connection were provided by 2022-2023.

(2) Reduces incidences of water wires in rural areas

(3) Effective management of water Resources — ensures water availability in all regions

(4) Increased Infrastructure for water harvesting eg. ponds

(5) Reduces the burden of diseases ⇒ Lesser Exposure to water borne diseases like Typhoid (SDG 2)

Candidates must not write on this margin

(6) ~~Gives~~ Women empowerment → Gives more time to women to spend in constructive work like job or creativity

(7) Rural development → Increased the human capital in rural areas.

(8) Achievement of Sustainable dev. goals like SDG 1, SDG 2, SDG 5 (reducing poverty, Good health and Equalities)

**Underlying impediments**

1. Scarce water Resource
2. Poor ~~imple~~ implementation of interlinking of River project
3. Climate change vulnerability → Reduces availability of potable water
4. Lack of awareness regarding WASH
5. Lack of funding to provide it in all areas
6. ~~Less~~ no role of Gram Panchayats in doing social Audit

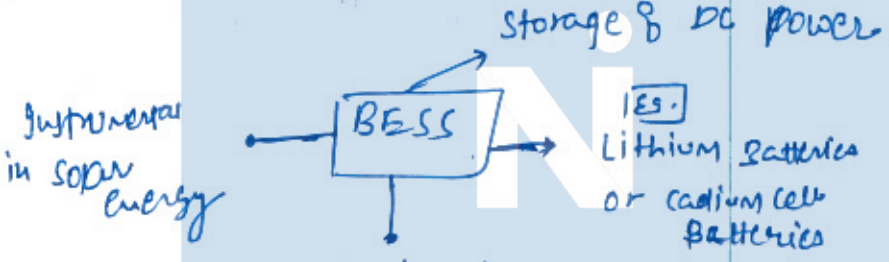
Jal Jeevan Mission will prove a milestone, if implemented in letter and spirit. Tap connection is not the solution, providing potable water sustainably into them is the way forward.

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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 system refers to storage of energy / power into battery banks for future use (Electric charge).




**Application of BESS**

1. **Energy security →**
   Provides storage of power to run the households or industries Eg. Li-ion batteries for solar module

2. **Instrumental for Electric vehicle industry →**
   To run the Electric vehicles batteries like Lithium (or) Ni-Cd are needed

3. **Achieve the Cop 27 targets -**
   - 50% of total energy production through renewable needs Battery storage Eg. Solar, wind, Hydrogen

Candidates must not write on this margin

4. To run the industries transitioning towards greener energy and moving away fossil fuel

Eg. National Hydrogen Mission

**Potential to Revolutionize the energy program of India**

1. Instrument to achieve 450 GW Renewable energy target by 2030
2. Will reduce the production of energy through fossil fuels like coal ⇒ achieve net Zero Target by 2070
3. Will reduce the Energy Poverty ⇒
   - Ensures 24×7 Electricity supply to all
4. Will develop the Electric vehicle Market.

**Challenges**

- dependency on imports to build battery Eg. Lithium, Cobalt
- Huge cost and needs high space to store
- Lack of manufacturing capability of India

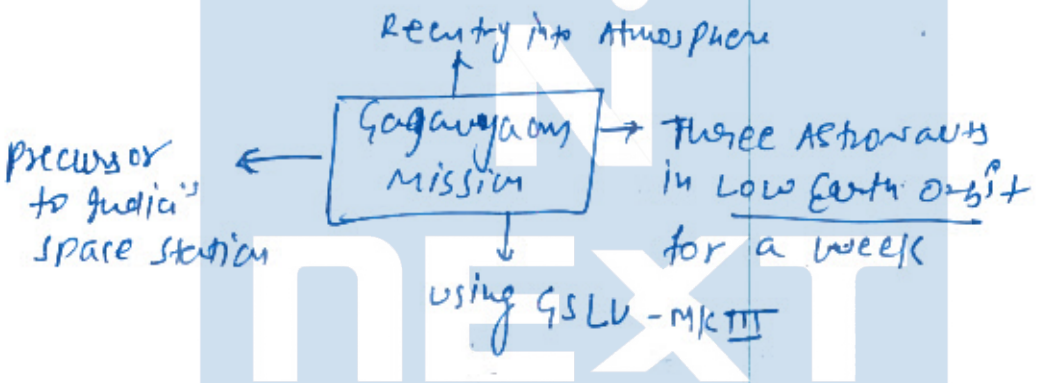
BESS has potential to pave the path of Meeting SDG Goals and transition to Green energy to achieve net Zero and 500 GW Renewable energy.

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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 is a manned mission to be launched in space to demonstrate the human presence capability of India in space.




| Developments | Challenges |
|---|---|
| 1. Reusable launch vehicle has been tested (RLV) | 1. Reentry of vehicle with crew is still in testing phase |
| 2. Experiments like HEX, LEX and CARE for ~~Sea~~-reentry module | 2. No Experience of India to launch these type of Mission |
| 3. Training of Astronauts by ROSCOMS (Russia) | 3. Landing through glider is still in developmental phase |
| 4. Full proof testing of GSLV Mk-III | |

Candidates must not write on this margin

5. Development of Humanoid to replicate space environment

6. Crew entry and Evacuation module has been tested.

4. No effective legislation to regulate the space activities

## Possible benefits of mission for society

1. Will prove the human presence in the space
2. Avenues for finding the alternative habitat in space
3. Development of various modules and equipments like laser systems, sensors, cameras used for social ~~benefits~~ applications eg. MRI
4. Avenues for Research society to understand about the space and its formation.

Gaganyaan mission is a begining however will prove a giant leap for the welfare of mankind. It will pave the way for India to have its own International Space station.

Candidates must not write on this margin

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

Recently, India has launched Green Hydrogen Mission to develop the production capability and supporting R&D with project cost of 19000 cr. ₹

**Role of Green Hydrogen in tackling climate Change and Pollution**

1. Renewable energy source ⇒ Abundantly available
2. Cleaner source of energy ⇒ No pollution or GHG Emission
3. Energy density of Hydrogen is higher so requires less fuel than fossils fuels
4. Instrumental to meet target of 500 GW Renewable energy by 2030. [COP27 pledge]
5. Will curb the exploitation of fossil fuel like Coal, Crude oil and natural gas.
6. Diversification of energy basket ⇒ India's energy basket is dominated by coal (>50%)
7. Thrust to Electric vehicles ⇒ Cleaner vehicles

Candidates must not write on this margin

However, Hydrogen based energy faces several challenges, which are as follows:

1. production of Hydrogen → Expensive
   need cutting Edge Technology (not available with India)
2. Production of Hydrogen through solar or Natural Gas etc. is not cleaner (Eg. Grey Hydrogen, Pink Hydrogen
3. Storage needs batteries ⇒ dependency on imports
4. More combustible hence safety concerns are there.

**Way forward**

1. Focus on Research and development to develop new technology to harvest Hydrogen
2. development of Battery energy storage system indigenously
3. Fuel cell based production of Hydrogen.

NGHM is essential to achieve the sustainable dev. goals regarding mitigating energy poverty and Ensuring the transition to cleaner and greener energy.

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

Joshimath recently witnessed the issue of land subsidence and land slides which is largely attributed to its fragile nature & Ecosystem and rising anthropogenic activities

**key lessons for Disaster Management**

- Himalayan Ecosystem is very fragile and it suffers from natural as well anthropogenic intervention.

(1) needs preparedness and mitigation efforts →

- Response based strategy is not feasible
- Vulnerability and Hazard mapping is crucial
- Hazard zonation at state and district level in Himalayan region is essential

(2) ~~Minimising loss to Ecosystem~~ Disaster Management Strategy →

1. Disaster management plans as per local needs and by taking all stakeholders together
2. Development of local volunteer corps for effective rescue and Management.

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## Key lessons for Environmental Conservation

1. Judicious Intervention in Himalayan Ecosystem
   - Need to rationalised development v/s Environment
   - deforestation has to be minimized
   - Infrastructure creation should be sustainable

2. Regulation of Activities →
   1. Unsustainable Tourism need to be regulated
   2. Creation of buildings and Infrastructure as per the required approvals and SOPs.

3. ① Afforestation and Reforestation is needed.

Joshimath incident is one of the warning to humans to stop the Excessive Interferences in fragile Himalayan Ecosystem which stands as a home to biodiversity, asthetic beauty and Spiritual centre.

Candidates must not write on this margin

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

Recently the demand of Khalistan (the secessionist or seperatist) a tendency emerged in Punjab which resulted into violence and threat to national security.

The seeds of Khalistan movement was sown by Bhindranwala in 1970's during emergency which was suppressed with operation Blue star.

However, still the strands of movement emerges.

**Developments in Khalistan Movement**

1. More Agressive form of movement - by the seperatist leaders in Punjab and nearby regions

2. International presence of the movement -

(Eg.) slogans for Khalistan in UK and Canada by Khalistan supporters

Candidates must not write on this margin

3. Breeding ground for Anti National elements →
   - Support of hostile neighbourhood and various Antinational organisations

4. Threat to National security and public law and order
   ↳ Man and Machinary was deployed to Effectively suppress the seperatist Movement.

**Measures to handle it**

| Short term measures | Long term measures |
|---|---|
| 1. Increased Intelligence and law enforcement agencies to curb these type of Movements | • Increased Jobs and employment opportunities to stop youth from being discouraged |
| 2. Talk with political leaders to ensure the peace and foster National Integrity | • Developmental activities<br>• Effective political leadership to get support of locals In favour of national integration |

Incidents like Khalistan Movements are serious threat to security and integrity of India which needs to be effectively tackled down.

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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

Owing to 15000 km of land borders and 7500 km of maritime borders, it is imperative for India to have highly advanced border security.

**Drone as a challenge to India's border security**

Growing incidences of pakistani drones crossing the border is a major concern for India's border security

1. Easy to operate remotely beyond the visual range
   ↳ makes them non Traceable
2. Deployed with weapons and explosives ⇒ threatens the security of borders
3. Self explosive drones – like KAMIKAZI drones are highly lethal used in warfares
4. Breach the privacy of India's borders
5. Easily disguises the surveillance systems and enters into borders.

Candidates must not write on this margin

## Suggestions to tackle drone problems

1. Development and deployment of Anti Drone Radar System at Indian borders (eg. Antidrone system of Israel.

2. Drone jamming guns to be deployed for security personnel

3. Comprehensive Integrated Border Management systems ⇒ (eg. use of smart fencing integrated with drone sensors.

4. Counter drones ⇒ to carry out the retreat operations

5. Capacity building measures of security forces to effectively intercept and quick Response in case of drone attack.

Drones add a new paradigm in Border Security, however, development of indigenous technology with private participation to counter the drones infiltration is need of the hour.

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

Electricity Amendment Bill, 2022 was brought to amend the Electricity act 2003 to make it more consumer and environment friendly.

**Advantages for Consumers**

1. Flexibility to choose any power supplier operating in their area ⇒ increased their bargaining capacity
   - competition among supplier → cheaper rates.
2. Effective Grievance redressal mechanism → Time bound and feedback based
3. Increased uninterrupted power supply distribution

**Advantages to DISCOMs**

1. Utilisation of existing infrastructure of other DISCOMs → will reduce their input cost and investment
   - Debt will be less.

Candidates must not write on this margin

2. Multiple Distributors can operate in the same area → reduces the monopoly of a discom in a particular area

3. RPO Renewable purchase obligations has been revised to make them more flexible to discoms

**Advantage to Environment**

1. Mandatory Provision of buying the Renewable energy ⇒ will reduce fossil fuel based energy consumption ⇒ less GHG Emission

2. Effective pooling of resources ⇒ will reduce the pressure on land and will arrest the deforestation for infrastructure creation;

3. Smart net metering – will rationalize the use of power at households.

**Shortcomings in the Bill**

1. Bill does not clearly define the role of state, and private discom operators

Candidates must not write on this margin

2. No Mention of issue of cross subsidisation or the subsidy to power tariffs

3. No effective mechanism to hold accountable to private operator for their inefficiency

4. Presence of multiple suppliers in the same region will deter their presence in rural areas or areas where demand is low.

**Measures**

1. Effective consultation with all stakeholders to frame the concrete policy
2. Ways to ~~reduce~~ reduce the losses of state DISCOMs
   (Eg. RDSS scheme revamping)
3. Effective implementation of smart meters
4. Focus on greener energy.
5. Effective grievance redressal mechanism for consumers.

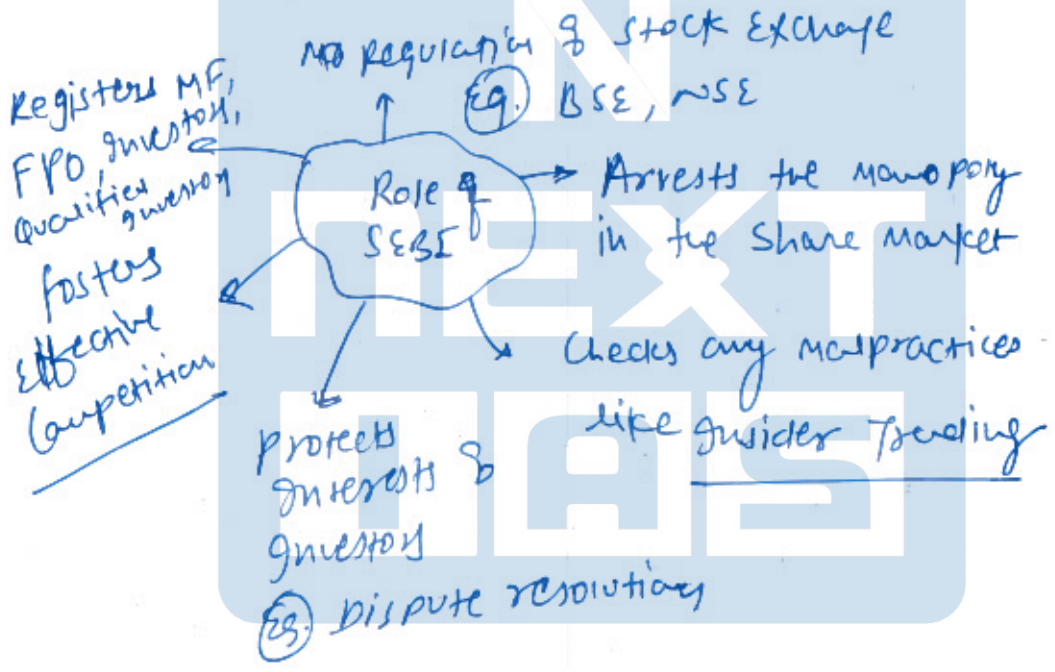
Electricity Amendment Bill, 2022 need to be relooked upon in order to foster the green energy with central idea of reducing the energy poverty in India.

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Q.12 भारतीय प्रतिभूति एवं विनिमय बोर्ड (सेबी) शेयर बाजार के नियमन और निवेशकों के हितों की सुरक्षा में महत्त्वपूर्ण 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 created with SEBI Act, 1992 in order to regulate and facilitate the stock market and Exchanges in India.




## Challenges faced by SEBI

1. overlapping of Jurisdiction with other bodies like RBI, IBC and IRDAI

2. Interference of Government into appointment and other related matters ⇒ hamper independency

Candidates must not write on this margin

3. Cartelisation by firms listing as Exchanges → impedes SEBI's ability to stop monopoly

4. Use Growing Use of technology - to manipulate the market (Eg.) Servorisive

5. Growing malpractices like insider trading

6. Cybersecurity threats like cyberattacks on NSE pose a serious challenge to SEBI

7. Regulatory loopholes in SEBI legislation → Eg. in sectors like over the counter derivatives

8. International obligations ⇒ (Eg.) Alignment with FATCA (Foreign Account Tax Compliance Act)

9. Limited Resources (Eg) ~~Karvy~~ Karvy Stock Broking case ⇒ SEBI took action in 2020.

## Reforms suggested

1. Strengthening of legislation - like SEBI Act and Securities Contracts Regulation act, 1956 to

Candidates must not write on this margin

Give more autonomy and plugging the loop holes.

2. Need to establish procedure for International Cooperation in order to promote regulation and safeguard public interest.

3. Need to equipped with latest technology to tackle the emerging threats
   28. Creation of high end Cyber Infra System

4. Fast track resolution of disputes through having a seperate Adjudicating Authority with full Autonomy and Independence.

5. Merging of parallel regulator like IRDAI and PFRDA in order to avoid overlapping of Jurisdictions.

SEBI is instrumental to maintain the sanctity of India's Exchange market which attracts the foreign investment and develops domestic Market, hence enough safeguards need to be taken for its effective functioning.

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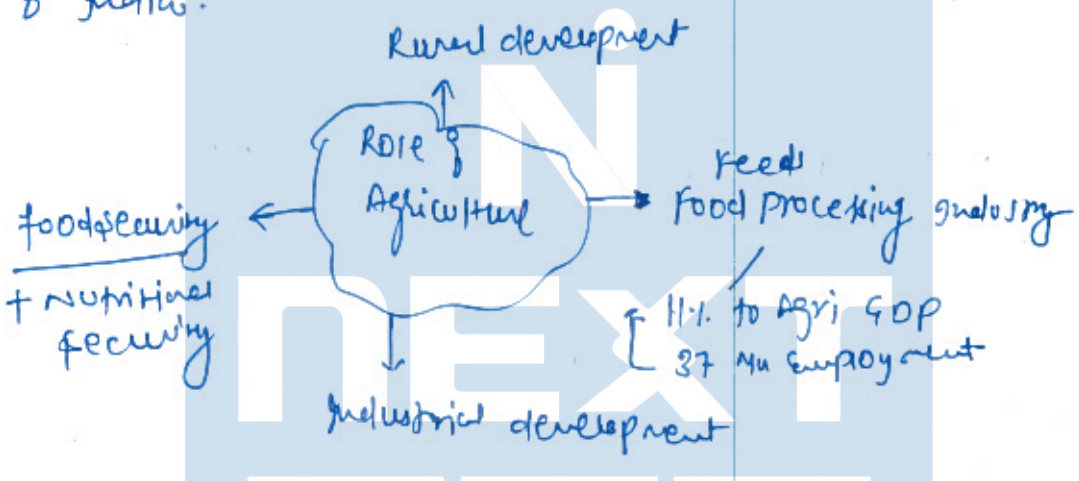
Q.13 भारतीय अर्थव्यवस्था में एक प्रमुख योगदानकर्ता होने के बावजूद, कृषि क्षेत्र कई बाधाओं से ग्रस्त है जो इसकी वृद्धि और विकास में बाधा डालते हैं। इन बाधाओं पर काबू पाने में प्रौद्योगिकी की भूमिका पर चर्चा कीजिए।

(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 contributes 15% to Indian GDP and employs around 45% of total workforce of India.




However, Agriculture sector is plagued by several constraints as follows →

1. At farm level (pre-harvest)
   - Issue of Mono cropping (No diversification) Eg. Rice-wheat system
   - High input cost & production
   - Poor productivity & food grain Production
   - Prone to climate change
   - very low public investment as % of Agri GDP (only 0.6%)

Candidates must not write on this margin

(2) Post harvest challenges →

(1) Huge wastages and losses → (Around 10% loss of food production as per Ashok Dalwai Committee)

(Due to lack of storage facility and unscientific storage)

(2) Poor price discovery by farmers →

- leads to distress sale
- Debt trap of farmers → suicides
- Reduces the investment into agriculture

(3) Poor supply chain infrastructure

. leads to poor development of food processing and secondary Agriculture.

## Role of Technology

(1) Mechanisation of Agriculture → will increase productivity

Eg. Use of Tractors, Drones to have better farming management practices

↳ will enable precision farming ⇒ Right Amount, Right Manner, Right Place, Right time — nutrients application

(2) Use of Remote Sensing technology →

Eg. Satellites and drones to have

Candidates must not write on this margin

idea of soil variability and related intervention to increase the crop production.

(3.) use of Artificial intelligence and IOT → to develop the decision support system for better farming Management practices

(4.) use of wireless sensor modules to regulate the sprinklers and other irrigation technique to increase water use efficiency.

**Steps taken by Goverment**

1. Project Kisan to enable use of drones in Agri
2. ~~Indian~~ IDSA ~~to~~ promote the technology in Agriculture
3. use of solar ~~power~~ plants and pumps to increase the irrigation efficiency eg. PM KUSUM

Agriculture is the backbone of Indian Economy. Technological intervention is imperative to double the farmers income by 2022 and make India a 5 Tn Economy by 2024.

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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

Around 50% of India's net sown area is irrigation dependent which implies the importance of Irrigation in Indian Agriculture.

**Impact of irrigation on Environment and Natural Resources**

**Positive Impact**

- Enables the Agriculture ⇒ food production ⇒ food security
- keeps the fertility of soil intact
- Nurtures the microorganism and pollinators in the soil in the absence of rain
- Crucial for regions where rainfall is less or scarce for Agriculture production

**Negative impact on Environment and Natural Resources**

1. Excessive Ground water Extraction →
   - depletes the water table

Candidates must not write on this margin

- Increases salinity of soil hence reduces the fertility of soil.

[ India is largest Extractor of Ground water in the world for irrigation purpose ]

2. Excessive Irrigation ⇒ leaching of nutrients of soils into water bodies ⇒ leads to Eutrophication
   Eg. Pond irrigation, Tube well
3. Reduces water availability for other purpose like households or industrial purpose
4. Loss of Biodiversity due to Excessive Extraction and Excessive irrigation on soil.
5. Drought like Conditions
6. Pollution of ground water ⇒ Eg. CGWB ⇒ 36% of Indian districts are water stressed.

**Measures to ensure sustainability and equity of Irrigation practices in Agriculture**

1. use of water saving Irrigation Techniques like Drip Sprinkler and micro irrigation
2. Use of fertigation ⇒ in which Nutrients mixed with irrigation water to increase the Productivity

Candidates must not write on this margin

(3.) Integrated farming system → to save the cost and increase the water use efficiency of Irrigation

(4.) promotion of coarse cereal crops like millets to reduce the demand of Irrigation water

(5.) Use of technology like drones and sensor to enable precision farming

(6.) Implementation of scheme like PM Krishi Sinchai Yojna (PMKSY) - which strives for per drop more crop.

Given the necessity of Irrigation to save the Indian agriculture, we need to adopt the Environment friendly practices like Drip sprinkler and judicious use of fertilizer to rationalise the water requirement.

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

India is among top 5 nations in field of nuclear and space science which is attributed to contribution of Dr. Homi Jehangir Bhabha and Dr. Vikram Sarabhai respectively.

**Role of Dr. Homi Jehangir Bhabha in Atomic Energy**

1. He pioneered the work of Atomic energy in India.
2. He established first atomic plant at Trombay and successfully tested it for generation of electricity
3. He was pioneer and instrumental in building the power plants complexes at Tarapur.
4. Instrumental in drafting the India's Atomic Energy Policy

Candidates must not write on this margin

5. Role in opening up of Bhabha Atomic Research Centre to foster the Research and development of Nuclear science

6. ~~keep~~ paved the path to develop a nuclear weapon in order to protect the national interests.

## Role of Vikram Sarabhai

1. He put the formulation & stone of India's Space Program in 1960's.

2. launched the first rocket successfully in Upper Atmosphere (Rohini)

3. put the formulation stone of India Space Research organisation

4. ~~He provided~~ launched the satellite which provided education and live streaming for million of students through satellite classes.

5. Collaboration with international space agencies like NASA to foster India's space program

6. He is known for harnessing the potential of Dr. Abdul Kalam who is the Missile Man of India

Candidates must not write on this margin

Both great scientist put the foundation Stone of Atomic and space science in India which paved the way for welfare of humanity and rising the stature of India as a growing TECHNOLOGICAL POWER.

**Relevance today**

(1) India has launched Chandrayaan 3 and embarking on path of Gaganyaan.

(2) India is among top 4 nation to have presence on Mars.

(3) India is a nuclear power having the deterring capability

(4) India has huge network of nuclear plants like Tarapur and Kudankulam.

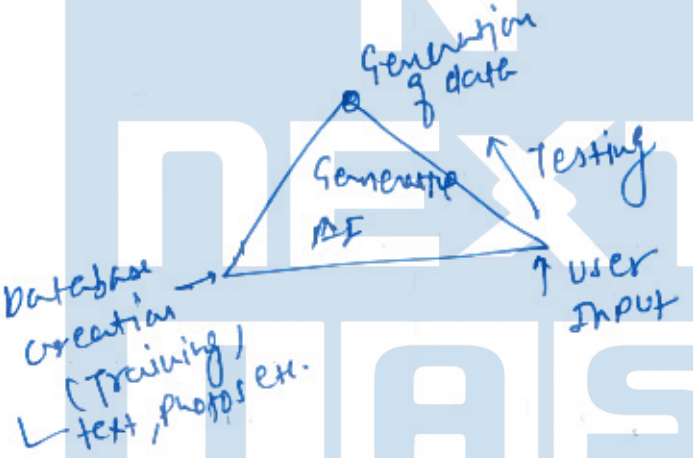
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Q.16 जेनरेटिव एआई निकट भविष्य में नवाचार की सीमाओं को आगे बढ़ाने का सामर्थ्य रखता है, फिर भी इसका सामाजिक प्रभाव पर्याप्त चुनौतियाँ खड़ी करता है। सविस्तार उत्तर दीजिए। (250 शब्दों में उत्तर दीजिए) 15 अंक

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 refers to the generation of text, speech, image and other media forms using its generative models.

Eg. BARD of Google, DALL-E and chatGPT (OpenAI)




Potential to push the boundaries of innovation in near future

(1) Innovation in health care
↳ AI assisted Drug discovery
↳ Conversion of medical images like X-ray, CT scan into real photos for better diagnosis.

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(2) Innovation in Agriculture →

Eg. AI enable drones and sensor to predict the crop and soil variability and make better farming management practice.
(will complement project KisAN)

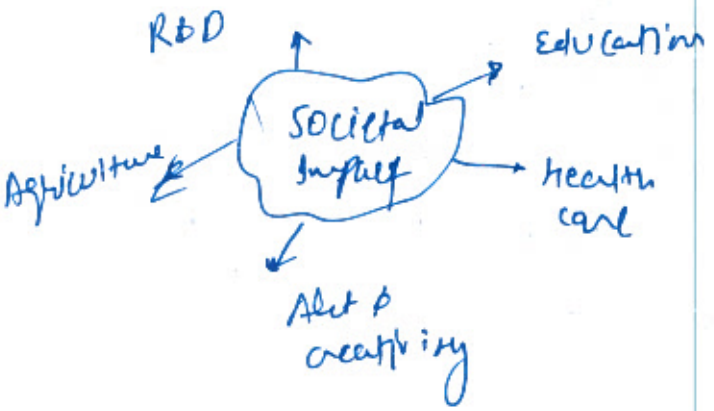
(3) Innovation in security & surveillance –

Eg. → cyber security threat Analysis & quick action
increased surveillance at border
Eg. Smart sensor at Indo-Pak border

(4) Innovation in supply chain ⇒
Eg. ⇒ predicting the disruptions

(5) In Art and creativity →
- Generation of video/audio in multiple genres and languages. Eg. AIVA

(6) Education and R&D → Eg. Literature Review



Candidates must not write on this margin

## Concerns

(i.) Data privacy ⇒ issue of data breach,
↳ Blackmailing Eg. ⇒ knowing medical history

(ii.) Prone to cyber threats ⇒ will create chaos in society
Eg. Attack on AIIMS cyber system

(iii.) Impinges the creativity and innovation
Eg. Students copy pasting the assignments from ChatGPT
Less scope for students to think and ask questions directly from Gen. AI

(iv.) Discrimination and marginalisation →
If Training data is biased → will lead to biased results.

(v.) Loss of employment → Automation of industry will result into loss of skilled & unskilled jobs.

Way forward
- Responsible AI along with generative AI
- need to develop Ethical and Regulatory guidelines
- diversification of input data to remove biases.

Generative AI may be a game changer, however, need is to regulate it for its best utilisation. (Data protection Bill 2023)

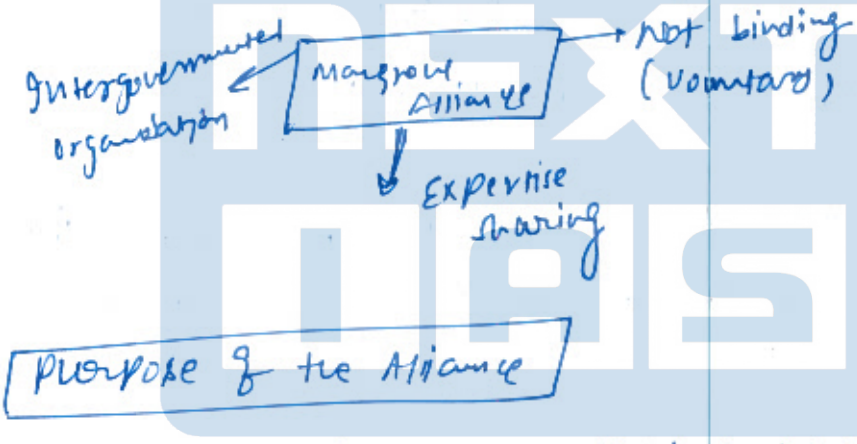
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Q.17 नवंबर 2022 में मिस्र में COP27 संयुक्त राष्ट्र जलवायु परिवर्तन सम्मेलन में लॉन्च किये गए "जलवायु के लिए मैंग्रोव गठबंधन" के उद्देश्य को स्पष्ट कीजिए। उष्णकटिबंधीय देशों की तटीय पारिस्थितिकी को बनाए रखने में मैंग्रोव के महत्त्व पर विस्तार से प्रकाश 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 was launched in Egypt by UAE and Indonesia with an objective to spread awareness about benefits of mangroves and their conservation worldwide.

India has also joined it.

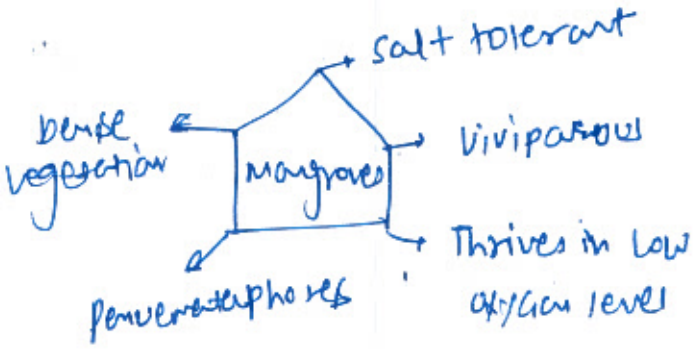



**Purpose of the Alliance**

1. To spread wider awareness about the utility and importance of mangroves among the world community
2. To explore ways to conserve and protect the decline population of mangroves
3. Expertise and technology sharing worldwide
4. Biodiversity conservation
5. Potential as response to climatic events like cyclones

Candidates must not write on this margin

## Importance of Mangroves




(i.) Reduces Coastal erosion →

↳ acts as first line of defence against cyclone or floods

↳ Reduces wind and wave speed

Eg. Sundarbans in West Bengal

(ii.) Habitat to marine Biodiversity → like Fishes bcz they breeds and thrive in mangrove regions ⇒ Coastal Community depends on them for livelihood

(iii.) Nutrient cycling → Mangroves traps the nutrients from runoff. They reduces the incidences of Eutrophication of coastal bodies

↳ provides fresh water since they traps the nutrients to Coastal ecology.

Candidates must not write on this margin

(IV.) Maintains the equilibrium between the coastal and freshwater region. They act as ecotone.

(V.) storage of huge Blue carbon -

Steps taken to protect mangroves

- Mangrove for future in 2004 (IUCN + UNDP)
- National committee on mangroves
- Biocarbon UNESCO designated Mangrove sites (Eg.) SUNDERBANS

Mangroves are the ecosystem engineers, they protect the coastal ecology, therefore, efforts has to be taken to conserve and protect them.

Candidates must not write on this margin

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

India is Prone to disasters given its unique geographical position and having a fragile Ecosystem -

More than 36% of India's area faces the challenges of Drought, floods and other Extreme climatic events.

**Disaster management in India**

(1) Response Centric approach

(2) Less focus on preparedness and mitigation

(3) Poor involvement of local Communities to tackle the disaster

(4) Highly centralised institutional mechanism (Eg. NDMA and SDMA)

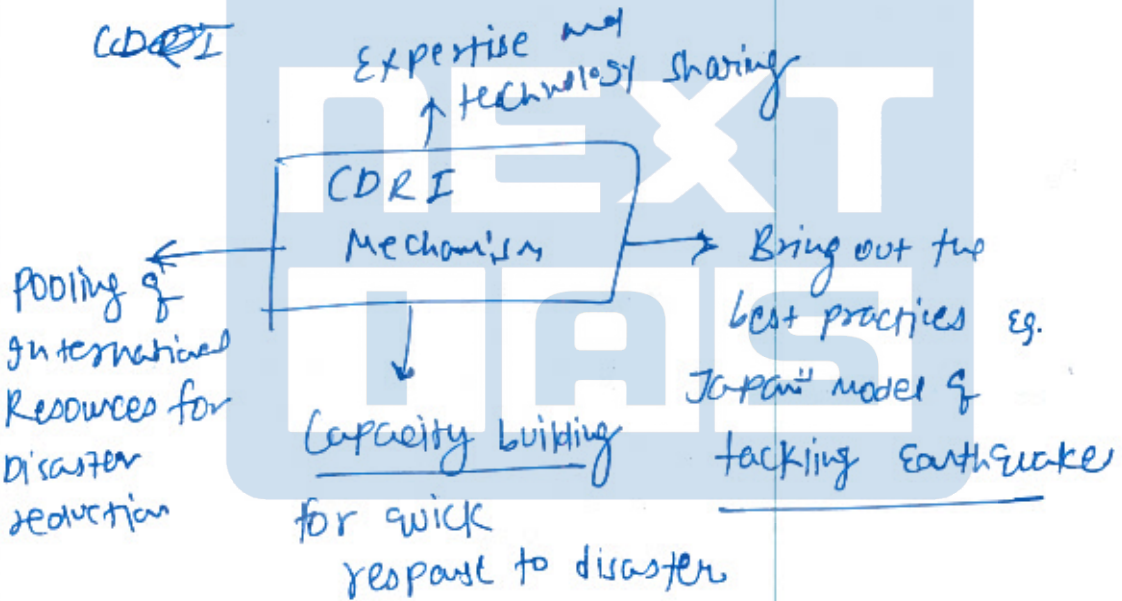
(5) Lack of use of technology & Coordinated efforts

(6) Problem in defining the Disasters as India has plethora of disasters every year.

Candidates must not write on this margin

As per, Germanwatch, India is 5th most vulnerable country to climate change and induced disasters.

Therefore, CDRI was mooted by India in order to foster the international collaboration and efforts to tackle disasters in addition to Sendai framework.




**Need for a new mechanism**

(1) Will move away from response centric approach to preparedness and mitigation based approach (eg. Odisha model of cyclone

Candidates must not write on this margin

(2) Involvement of local communities and local practices in order to best response to disaster

(Eg.) Practice of Nicobarese tribe to predict the Tsunami waves

(3) Collaboration and coordination among various agencies to reduce loss of lives and property and take prompt action

(4) Adopting of best practices worldwide

(5) Increasing frequency and intensity of disasters due to Global warming

(Eg.) cyclones in Arabian Sea & Glacial Lake outburst flooding Uttarakhand

(6) It will complement the existing efforts like Sendai framework.

India needs more proactive approach, given its vulnerability to disaster. CDRI will be a milestone to level the world in the capacity of disaster management.

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.

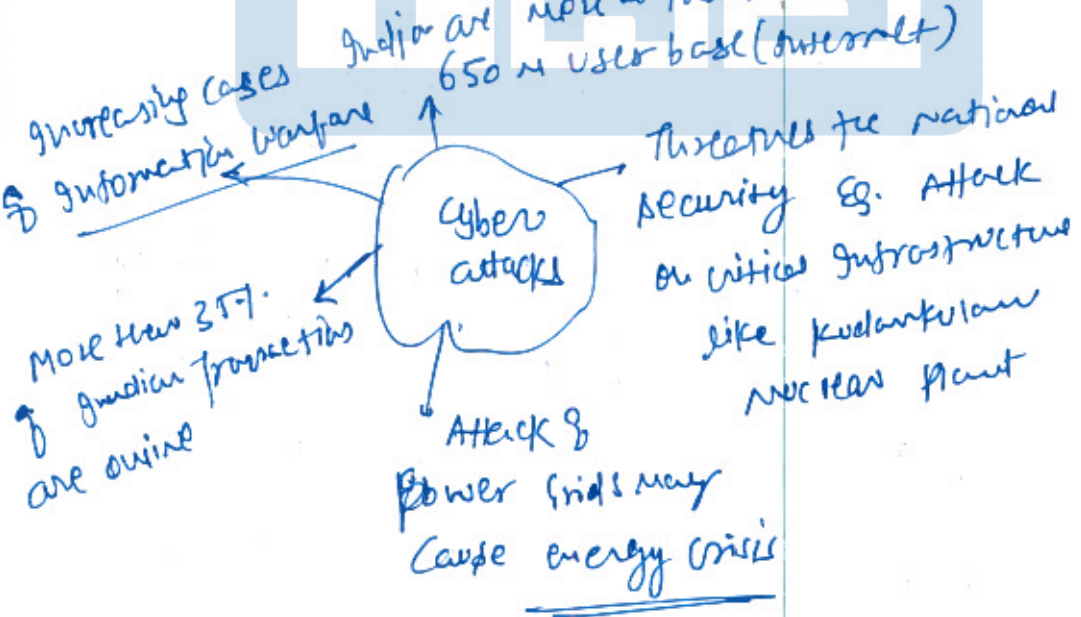
(Answer in 250 words) 15 Marks

As per symentar, India is third largest vulnerable country to cyber attacks.

In 2021, India seen 18% increase in cyber attacks as per a research.

Eg. Attack on AIIMS cyber system.

**Need for stronger cybersecurity measures and policies**



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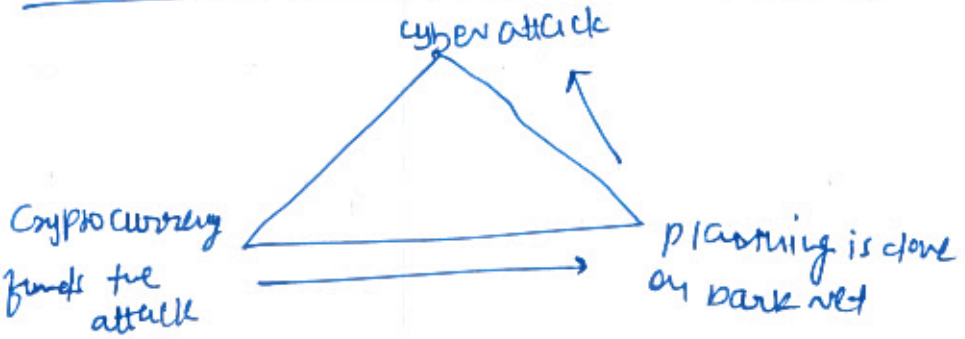
## factors contributing to rising trend of Cyber attacks

1. Social factors
   - Lack of cyber hygiene behaviour
     - Eg. No installation of Antivirus in systems
   - Poor digital literacy in India (<50%)

2. Technological factors
   - India dependent on using foreign operating system and cyber hardware
   - Lack of trained professionals in cyber security

3. Poor infrastructure →
   (1) Multiplicity of cyber agencies (CERT-In, I4C, NCIIPC/NTRO, DSA) however, they have lack of coordination and overlapping jurisdictions
   (2) Various laws like IT Act ~~of~~ 2000 and IPC has overlapping features.

4. Cryptocurrency, Darknet and Cyber Attack Trio



Candidates must not write on this margin

(5) Accessible all the time 24x7

(6) Flexibility to wage the attack from anywhere

(7) Support of state and non state Actor (Eg.) Attack on Indian cyber system by Red-Echo (china supported firm)

## Impact Analysis

(1) Threat to national security ⇒ Eg. cyber attack on defence System (or) power Grid (Energy crisis)

(2) Halt to critical services - like Health care (Eg.) Recent attack on AIIMS hospitals,

(3) threatened critical Infrastructure → like Kudankulam Nuclear Plant and Extra like railway operations.

(4) Chaos in the society → due to various data leaked like sexual orientation, Health profile or family details,

(5) Threat to financial security ⇒ (Eg.) cyber Frauds, leaking of Bank account numbers.

- Steps taken
  - Institutional
    - NATGRID
    - CERT-IN
    - I4C
  - Regulations
    - ITAct 2000
    - Digital data Protection Bill 2022
    - IT media Ethics rule
  - Social
    - cyber surakshit Bharat.

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 has crossed 15000 km of international land border and 7500 km of coastal boundary, therefore, effective and efficient management of coastal and terrestrial borders are paramount for national security.

**Issues in Existing management scheme**

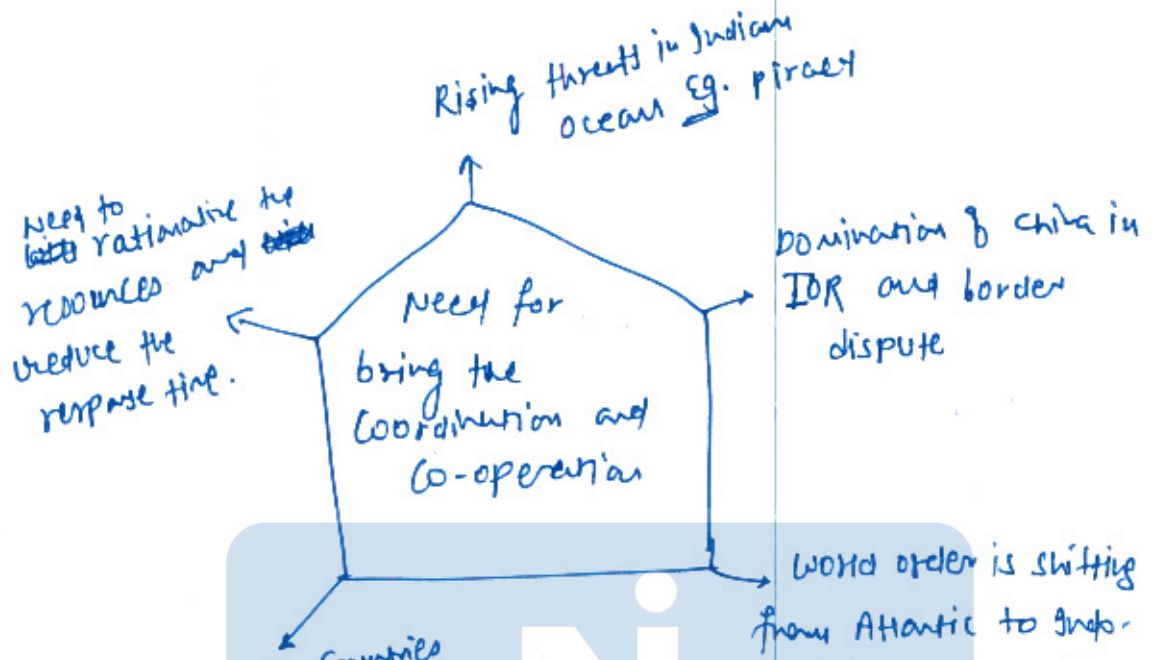
(1) Marine border security is not given as much importance as given to land border security

(2) Roles are not clear ⇒ (Eg.) there is an overlapping jurisdiction between Indian Coastal Guards and state police.

(3) working in isolation ⇒ Plans and policies are prepared seperately for marine and land borders

(4) Resources and budget allocation is highly skewed towards land border security.

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## Benefits of cooperation and coordination

(1) Will rationalise the resources requirement →

Eg. logistic supply

( The formation of chief of defence staff office has resulted into resources optimizations

(2) Effective response mechanism →

to deal with the exigencies and prepare the fast & effective response plan

(Eg) will augment India's Trilateral Command at Andaman & Nicobar.

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(3.) Resources and expertise sharing to bring out the best practices

Eg. deployment of SMART sensors under CIBMS on Indo-Bangladesh border

(4.) Integrated border management ⇒ will augment the capabilities of forces.

(5.) Unified Planning : at Ministerial level in order to best utilise the available border forces and do their capacity augmentation together

(6.) Increased Budget allocation

Way forward

(1) Inter forces Collaboration Eg. Joint exercise and Patrolling

(2) Proper Budget allocation to both the border forces

(3) Inclusion of high end technology Eg. Drones, Night vision weapon

Integrated Border security is essential for India to tackle the growing challenges at land as well as marine borders.

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Space for Rough Work

NEXT IAS