

# NEXT IAS

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Registration Number :			Date of Examination :	01-08-2023
Exam Centre :	Old Rajinder Nagar <input checked="" type="checkbox"/>	Bhopal <input type="checkbox"/>	Online <input type="checkbox"/>	

Test - 3

Code : TC073

## MTS IGP Batch 2023

### GENERAL INSTRUCTIONS

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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. : .....

**N**  
**NEXT**  
**DIAS**

(For filling by Examiners only)

Evaluator Code :

Q.No	PgNo.	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.
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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 "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 taxes refer to taxes as one time mechanism against excessive profits made by firms owing to POLICY / DISASTERS / CIRCUMSTANCES.

OIL firms during RUSSIA-Ukraine felt over large profits

Proposed against corporates owing to RISING inequality  
ex: BINI coefficient as D. 46

EXAMPLES of WINDFALL taxes.

Certain Pharma companies during COVID-19 in Europe

Norway's WINDFALL taxes on WIND energy sector.

WINDFALL Taxes as REDISTRIBUTOR of Wealth

① In line with Principles of PROGRESSIVE TAXATION

② They promote pool well being by reducing MONOPOLY of few firms.

③ They enhance REDISTRIBUTION of wealth from firms & government which can enhance SOCIAL expenditure.

④ they help in SUSTAINABLE development and hence economic equity on long run.  
ex: Windfall taxes on oil in USA → subsidise on SHELL, BP. Renewable energy like Solar, Biomass.

however, WINDFALL taxes are not REDISTRIB-  
-UTION directly:

① depend on STATE for REDISTRIBUTION

② issue on allocation of redistribution lies on STATE discretion  
ex: most disadvantaged may not be recipients - INTERNALLY displaced, climate refugees.

② they are not proportionate to SUBSIDIES given to corporates in TAX exemptions

hence, windfall taxes are one time phenomenon, but longer term EQUALITY needs "3Is" - INVESTMENT in Education, INSURANCE or social security, INTEREST in capital formation

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

Monetary policy Committee (MPC) is a 6 member body headed by RBI Governor in interest of managing POLICY rate within RBI's mandate of INFLATION

ex: as per Central Government, RBI under RBI Act, 1934 must control inflation within 4% ± 2%

PERCEIVED Successes

1. Has been able to limit INFLATION through Quarterly reviews  
ex: late cuts in COVID-19 era (Accommodative stance)
2. 6 member with Balance of GOVERNMENT & RBI representation
3. Handling balance of growth and INFLATION  
ex: repo rate rise in High inflation era.
4. INDIA'S strategic independence despite FEDERAL spiral-



ex: INDIA'S monetary policy in June 2023.

Challenges of INFLATION targeting

1. Lack of effective tool to hold MPC accountable  
 ex: report if INFLATION greater than 6% for 2 months

2. LAG effect in monetary policy

3. needs stronger FISCAL policy to aid INFLATION

ex: Food inflation needs EPCA and BUFFER STOCK monetary

4. Issue of rising IMPORTED INFLATION in globalisation era.

5. Coinage of "GREEDFLATION" as corporates profiteer out of inflation.

In this context, there is need for INTENSIVE faster frequency consumer surveys, policy rate transmission instruments by banks and Co-ordinated FISCAL policy on long run.

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

Millets or Shreeanna belong to POCAEAE family and are NUTRI Cereals that have MULTI pronged role for rising GLOBAL challenges

1. Millets are Hardy crops, can sustain Droughts

2. important for Farmer income in RAIN Fed areas.

MILLETS in SUSTAINABLE Agriculture.

3. Potential for CLIMATE Smart agriculture.

4. Consume 3X lower water than RICE, Sugarcane (VIRTUAL water exports)

5. need lesser soil fertility

6. reduced fertilizer, Pesticide inputs.

- Role in INDIA'S Food security
1. are NUTRI cereals, help in NUTRITIONAL security
  2. tackle Cereal intake of rice & wheat with Balanced DIET & diversification
  3. tackle diabetes with low glycemic index
  4. Higher fibre, protein per capita over monoculture crops.
  5. enhance INDIA'S per Capita production.
  6. Also help in Farmer income doubly (Dahuri committee)

in this context, there is need for MILLET promotion as 2023 is <sup>International</sup> Year of Millets with R2E products, G20 conference, Farmer empowerment for INDIA'S Pkhe (SDG 1 & 2) - MAHARISHI Prarambh in G20.

Q.4

जल जीवन मिशन में पेयजल की उपलब्धता और पेयजल तक पहुँच में क्षेत्रीय विषमता को समाप्त करने का सामर्थ्य है। मिशन के महत्व पर प्रकाश डालते हुए, वांछित उद्देश्यों की प्राप्ति में अंतर्निहित बाधाओं पर चर्चा कीजिए।

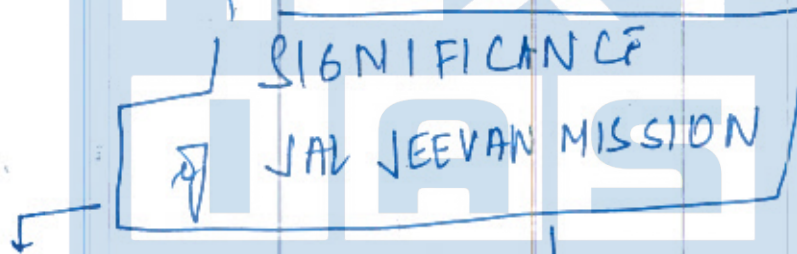
(150 शब्दों में उत्तर दीजिए) 10 अंक

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 is oriented for UNIVERSALIZATION of Potable water across length & breadth of country

55 LPCD/ per day/ per capita water

Prioritizing Quality water for all households



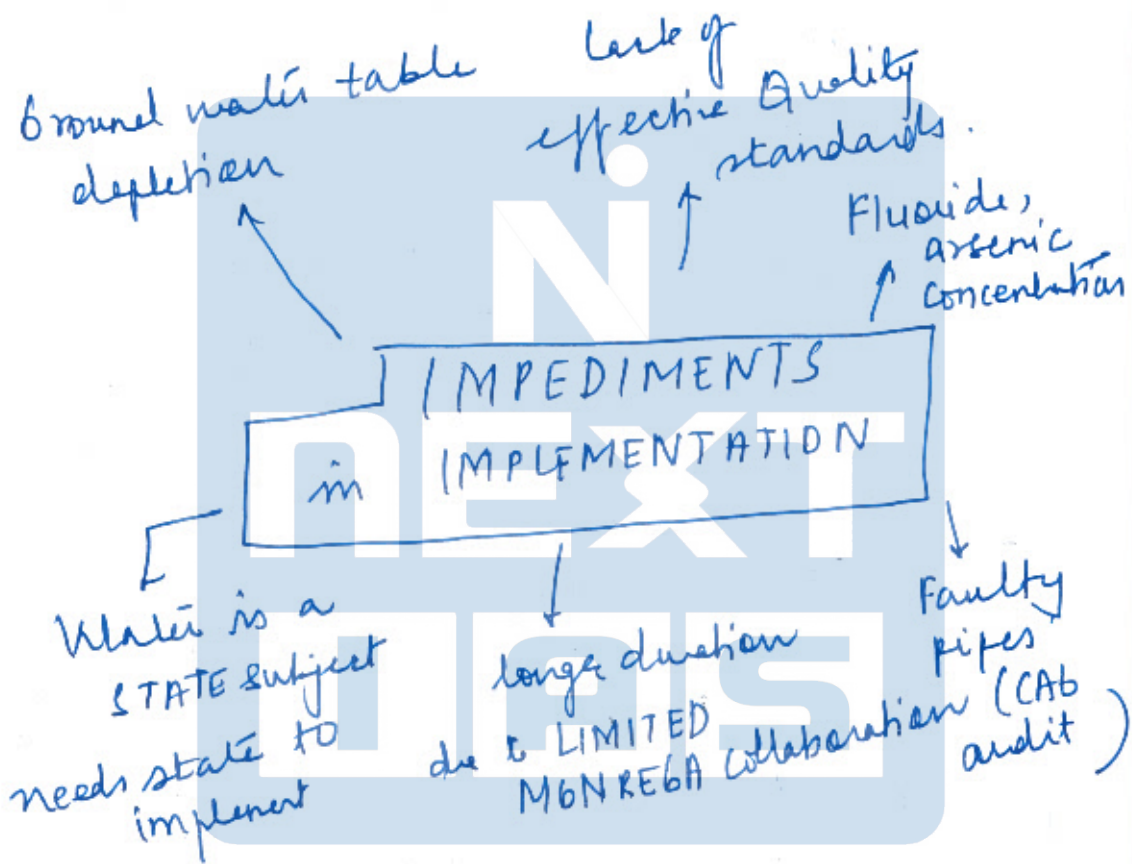
Availability via PIPED water connections.

Accessibility via target of 2024 for all rural households

1). This also enhances RURAL empowerment with 24\*7 water

2) reduce TIME poverty of woman & girl child in rural areas (spent on sump for collection)

3) reduce REGIONAL conflicts or "WATER wars" for drinkly water  
 ex: WATER crises in Maharashtra



hence state models of TELANGANA'S Mission Bhagiratha, PRI-VLB capacity have to be strengthened for NAL SE JAL to be affordable, available, accessible to all

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 (BESS) are devices for storing produced electricity as energy and drive of fuel devices  
 ex: Lithium energy Battery to store energy & drive of Electric Vehicles.

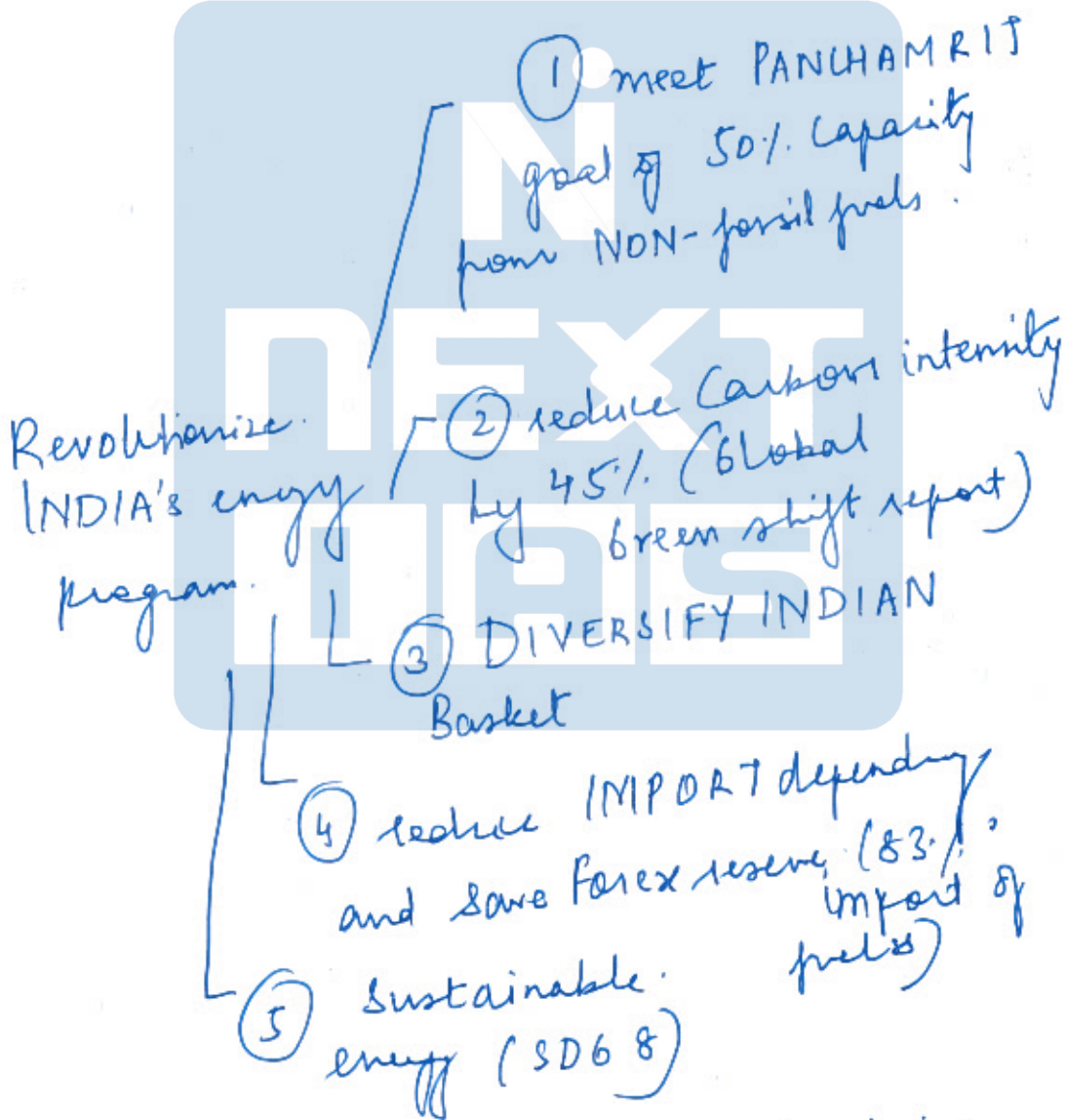
BESS in decentralization of power production

**APPLICATIONS**

- ↳ use in RENEWABLE energy storage  
 ex: Offshore wind, wind-solar hybrid.
- ↳ To run tractors, pumps in Agriculture.
- ↳ To enhance non fossil fuel run vehicles  
 ex: Flexifuel vehicles.

BESS can be used for enhancing Farmer income through POWER production (Urja datta)

BESS can also lead to Biomass production (Algae produced Biofuels)



hence, BESS need stronger supply chain, mining of critical minerals, KABIL like joint exploration agreement for energy security

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 is manned mission of ISRO to take INDIA'S first astronauts to moon.

DSA in Bangalore for training

strengthening training with ROSCOS MOS

DEVELOPMENTS

VYOMAMITRA humanoid to accompany Astronauts

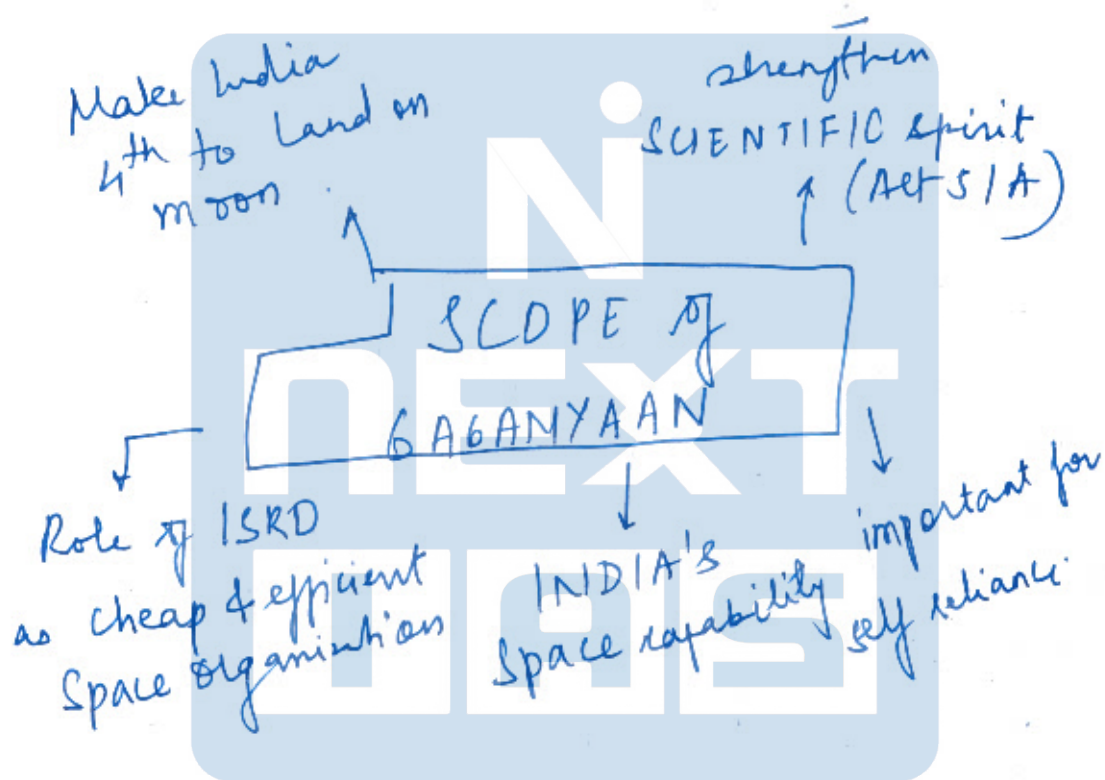
POBM-2 module for enhancing Rocket launch.

CHALLENGES to mission

- 1. delay due to RUSSIA-Ukraine war.
- 2. LVM-3 has not launched INDIVIDUALS
- 3. Resource crunch with ISRO. (1% of funds of NASA)



4. delay due to Chandrayaan-2 FAILURE
5. limited PRIVATE sector participation



Thus, in this context Gaganyaan needs to be seen as PARADIGM in INDIA'S SPACE program for future leadership (VIKASIT Bharat at 2047)

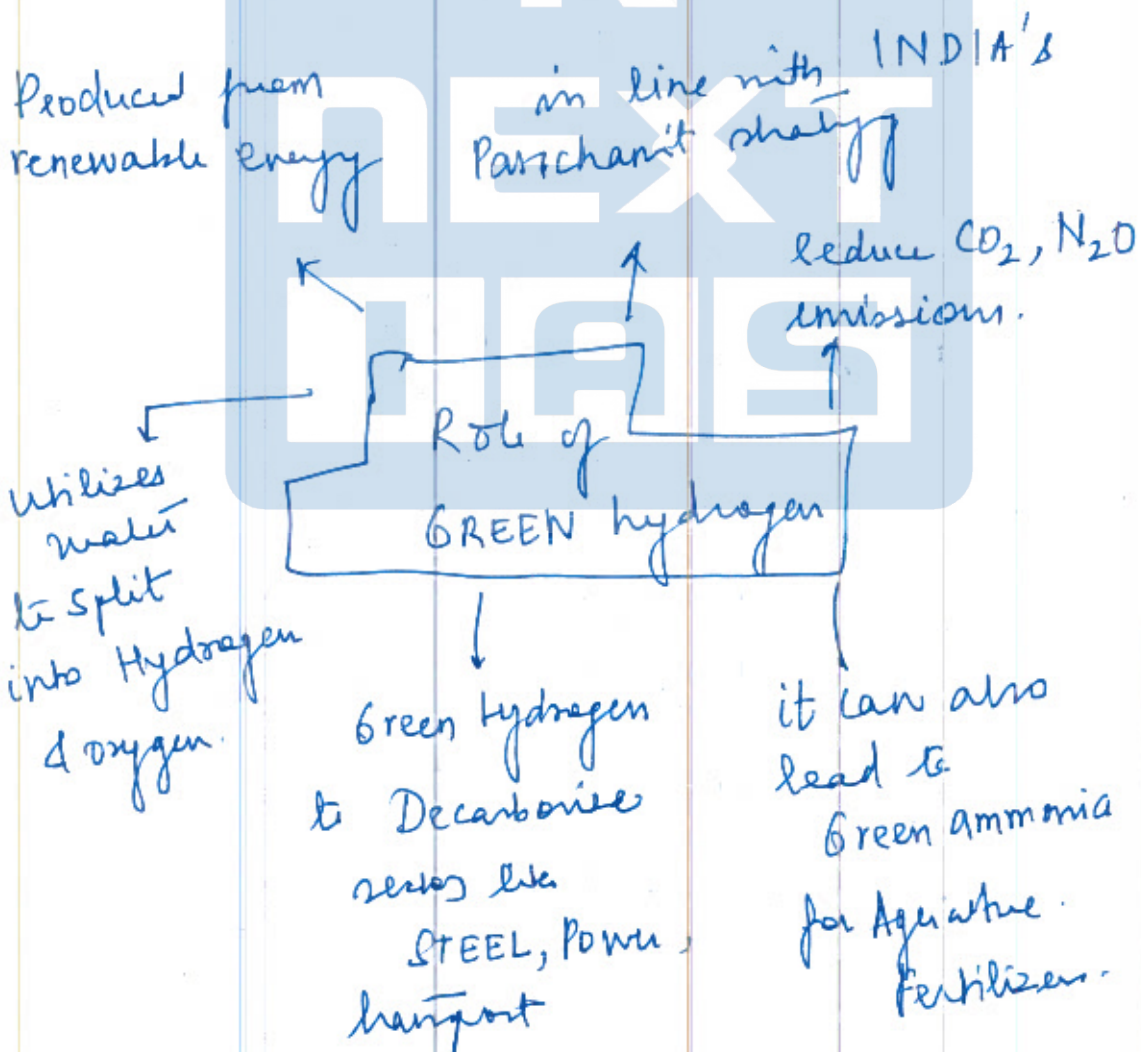
Q.7 "जलवायु परिवर्तन और प्रदूषण से निपटने की हमारी खोज में हरित हाइड्रोजन एक सरल और जादुई समाधान हो सकता है"। भारत के राष्ट्रीय हरित हाइड्रोजन मिशन के आलोक में कथन का आलोचनात्मक विश्लेषण कीजिए।

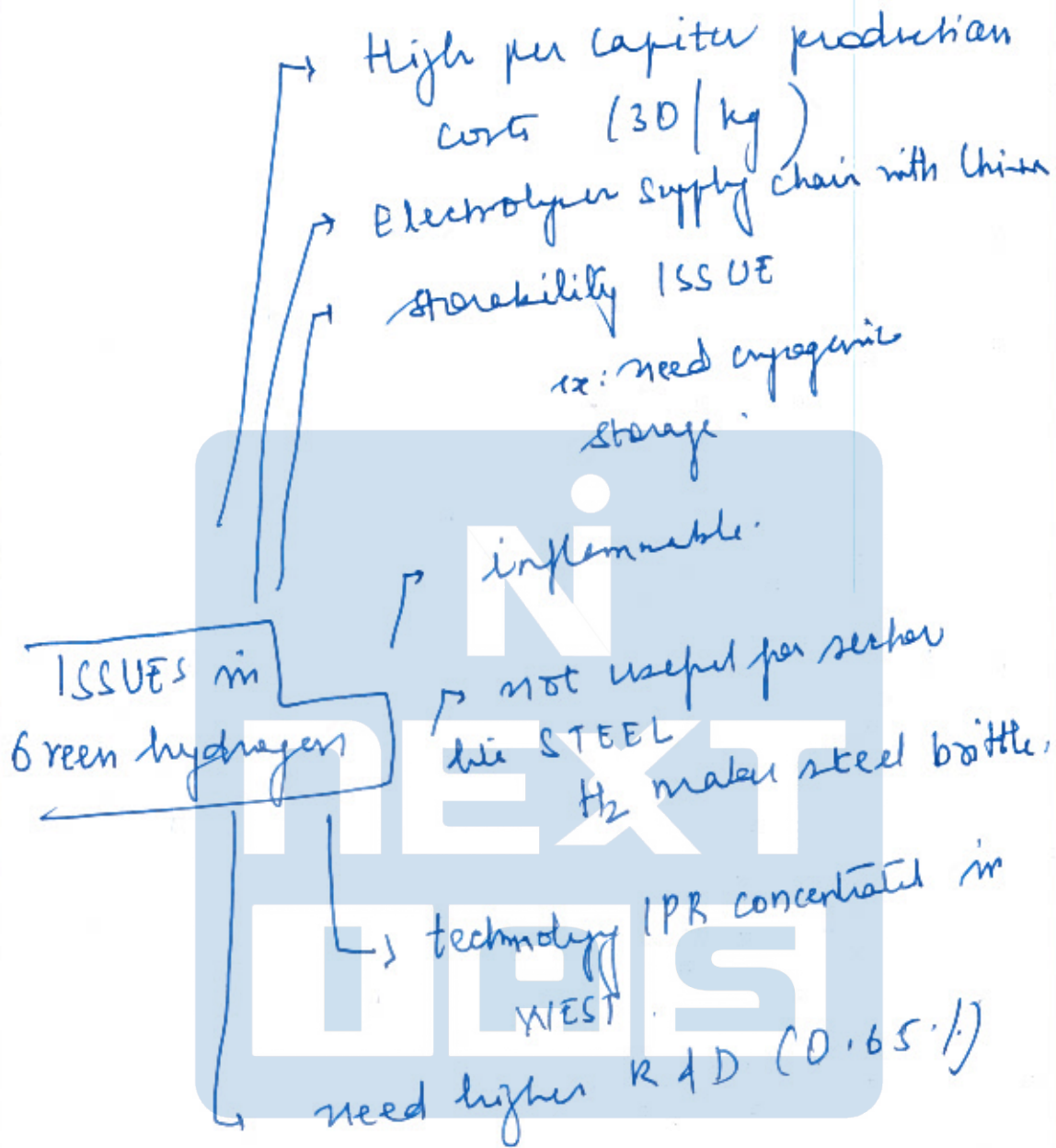
(150 शब्दों में उत्तर दीजिए) 10 अंक

"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

Green Hydrogen Mission was granted 17,700 crore as per Budget 2023 to be INDIA's path to greengrowth and tackle climate change issue.





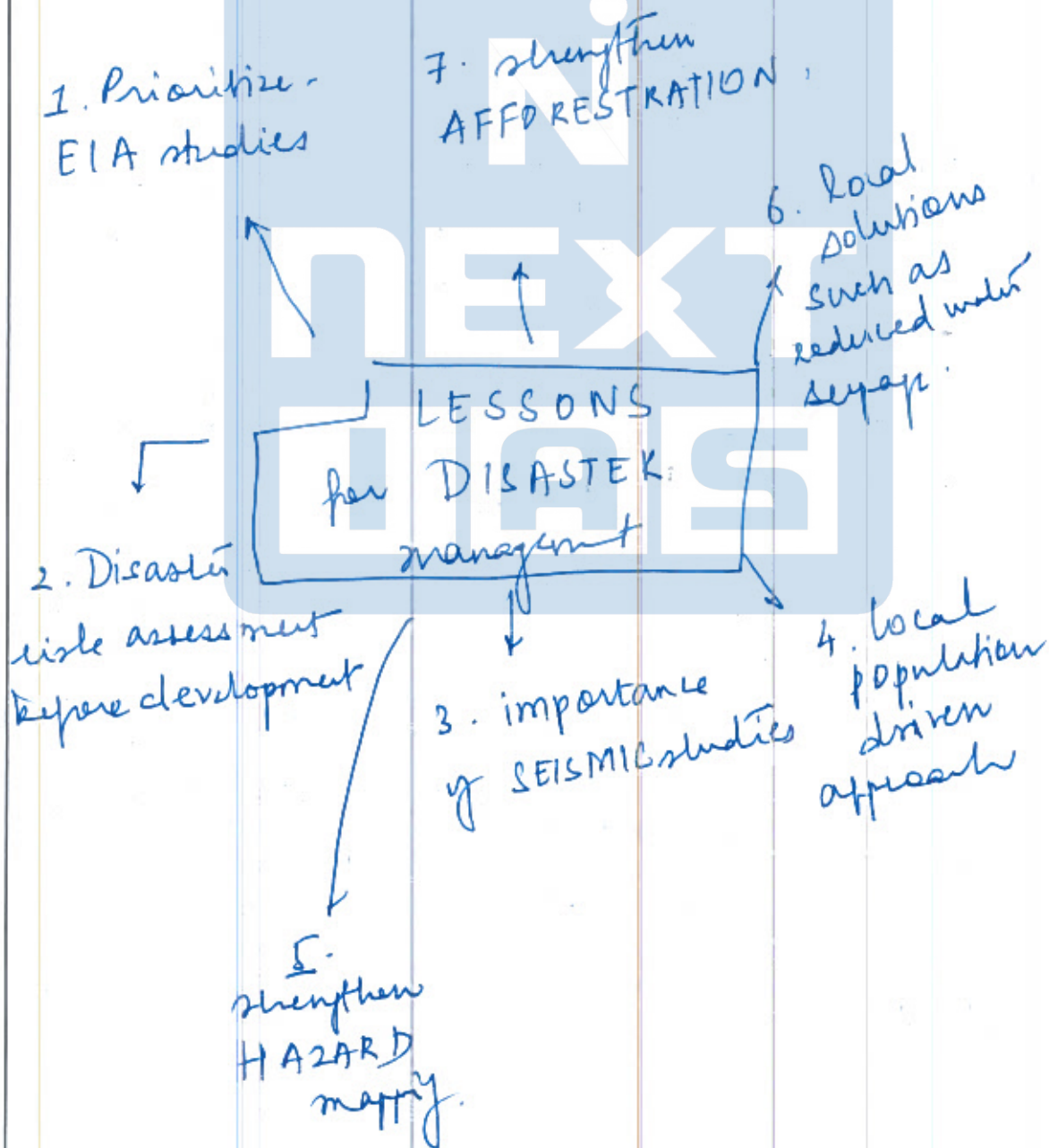
hence green hydrogen needs to be complemented with R&D, other renewable energy along with Electrolyser PLI in INDIA

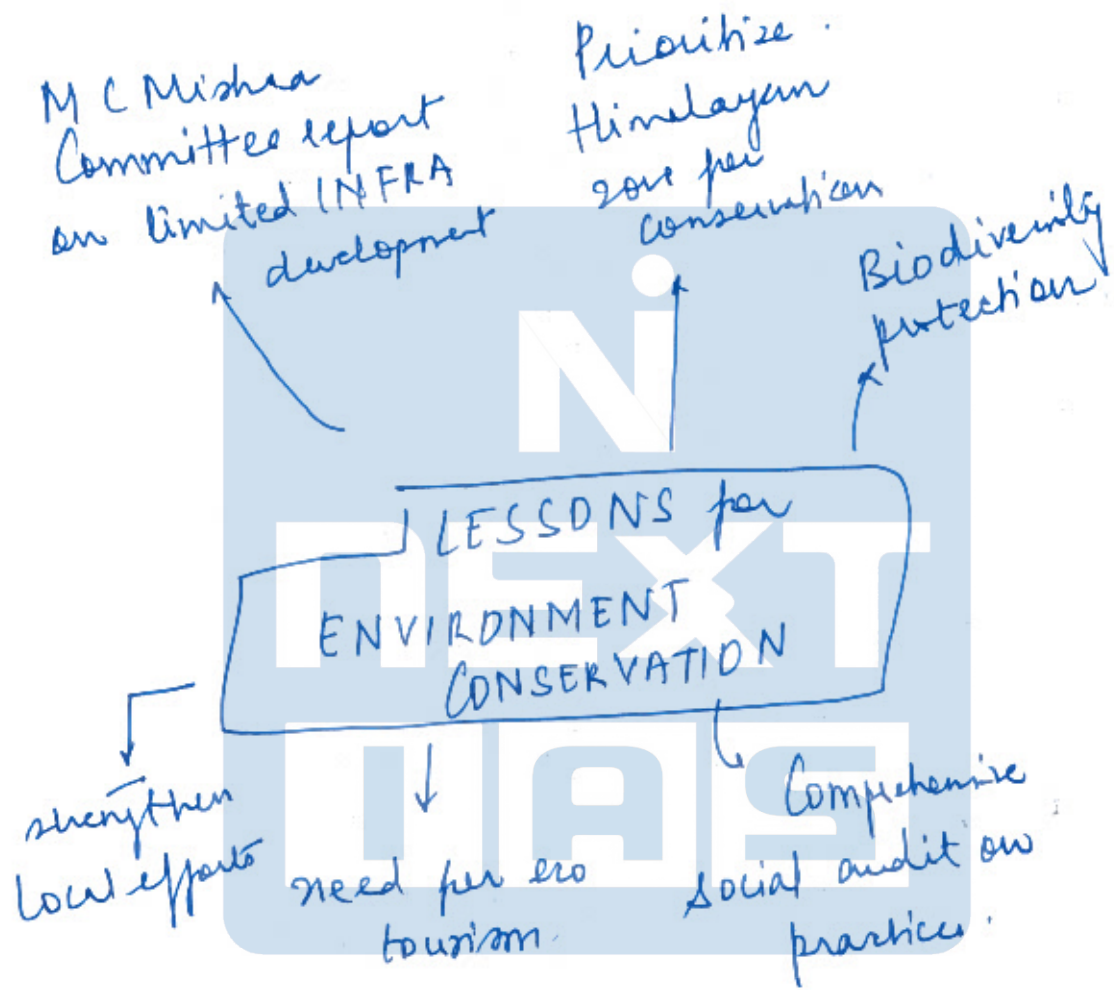
Q.8

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 land subsidence has shown need for stronger Disaster risk reduction.





hence, it is a WAKE-up call  
for protecting HILL states from Kashmir to  
North-east on SUSTAINABLE and EQUITABLE  
development for all.

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

Recent incidents in Punjab such as attack on Police station, Amritpal Singh subsequent escape and arrests have led to rise in awareness of KHALISTAN ISSUE

Trends to show

KHALISTAN ISSUE simmering in PUNJAB.

1. Support of certain locals for Amritpal Singh escape.

2. Call by local leaders for "DARBAR khalsa"

3. Disenchantment over Farm LAWS and Sikh farmers even after repeal.

4. Drug impact on youth and illegal trafficking from "Golden Crescent"

However, it is true that KHALISTAN issue remains an <sup>certain</sup> diaspora led Propaganda in

TRENDS to show simmering outside INDIA.

Banned outfit SIKHS for JUSTICE propaganda and fundy

- ② role of ISI in funding Khalistan voices for INDIA's disharmony
- ③ attack on HINDU temples in Canada, Australia
- ④ attack on INDIAN consulate in Britain
- ⑤ leaders demanding referendum are not Punjabis but older & richer diaspora with POLITICAL ambitions as per DRF report

**MEASURES to handle**

- 1. 'NO FUNDING for Terror' by strong monitoring on funds to NBOs / organizations.
- 2. Border patrol & CBIMs system
- 3. Prioritizing Youth development  
ex: NASHA Mukth Bharat Abhiyan.
- 4. Special package funds for INDUSTRIALIZATION of Punjab.
- 5. Diaspora support against TERRORISATION.  
ex: events; talks and PBD convention

Thus, HEALING and HELPING touch with INDIANUNITY and Punjab Prosperity are need of hour.

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

UAVs of drones are rising challenge as per SIPRI Report in Border security as they are easy to operate and remain anonymous.

ex: Armenia - Azerbaijan war was decided by use of UAVs

- Challenges of UAV**
1. Remote controlled with NO DIRECT visibility
  2. used along border for
    - Arms dropping
    - drug trafficking
    - counterfeit cash smuggling

ex: PAK border along Punjab.
  3. can be used for Reconnaissance, Threat assessment
  4. MASSIFICATION of drones with DIY kits, reduced costs of production



5. Can be used for missile launches, explosable material attacks

- SUGGESTIONS for tackling drones
1. Implementation of drone policy (2019)  
ex: No go zone for critical infrastructure
  2. JAMMERS along border and interceptors to limit drones.
  3. Use reconnaissance LiDAR & RADAR satellite to monitor UAVs  
ex: RISAT of Army
  4. strengthen PATROL with UAVs along border
  5. Community Policy to report UAV instances.
  6. detectors for destroying UAVs above.  
ex zone ex: Kamikaze drones

hence, drone technology is need of how to strengthen border security and also adequately boost Technology oriented comprehensive border management.

- 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 is oriented in PARADIGM shift in POWER sector reforms with CONSUMER centric approach, reducing UNSUSTAINABLE debt levels of DISCOMS and also uphold INDIA's vision for Net zero by 2070 (PANCHAMRIT strategy)

ADVANTAGES  
& CONSUMERS

1. Metering of all Electricity connections.

2. Promoting PRE-PAID smart meters for reducing EXPENDITURE

3. Proper separation of feeders for Agriculture, INDUSTRY and household for SUSTAINED load and reducing intermittent disruption.

1. reduce legacy debt burden with PERFORMANCE related incentives

**ADVANTAGES & DISCOMS**

↳ 2. removal of legacy Power purchase agreements, moving towards MARKET model.

ex: PPA were Producer centric models.

↳ 3. Prioritize DISCOM role in reducing 22.7% of losses via AT&C losses.

**ADVANTAGES & environment**

① SDG 8 goal for CLEAN & reliable energy for all

↳ ② Promotes DECENTRALISED energy production.

↳ ③ INCENTIVISES renewable energy integration, reduced green house gas

ex: KISAN as Uja data via KUSUM

↳ ④ Promote creating INDIAN SMART grid for INTERoperability and phasing out inefficient coal plants.

1. Electricity as Concurrent subject needs STATES or board for IMPLEMENTATION

no one size fits all approach

need change in model tariffs.

SHORTCOMINGS in Electricity Act

High levels of LEGACY debt in DISCOMS

Renewable energy integration can increase intermittent power disruption.

Limited review of CERC, SERC, Strucres.

WAY Forward

- 1) Building on SMART metering for ELECTRIFICATION and universal metering
- 2) STATE led model of implementation
- 3) successful PPP discom models like DELHI - TATA Power must be studied
- 4) CERC, SERC, DERC must be studied

thus electricity act must be Federal oriented for Consumer welfare and greengrowth of natl.

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 was established as a regulatory body for capital markets under SEBI Act, 1992 to prevent incidents like market manipulations (Harshad Mehta and protect investors.

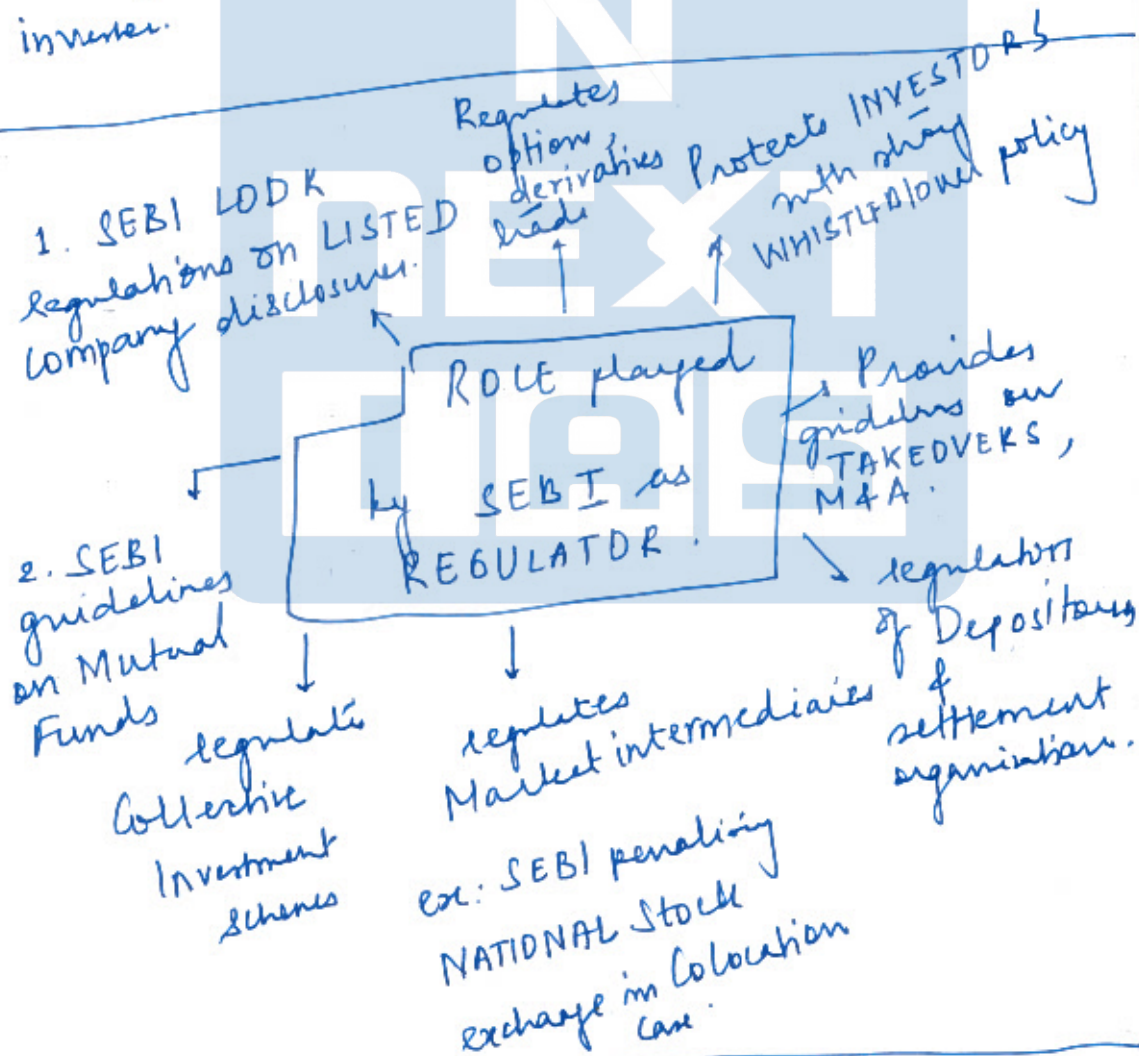


Fig : role played by SEBI

CHALLENGES faced by SEBI

→ Only authority on LISTED Companies while unlisted companies are under MINISTRY of Corporate Affairs.  
ex: SAHARA case.

→ lack of strong Proactive Mechanism like SEC in USA.

ex: delay in Adani report.

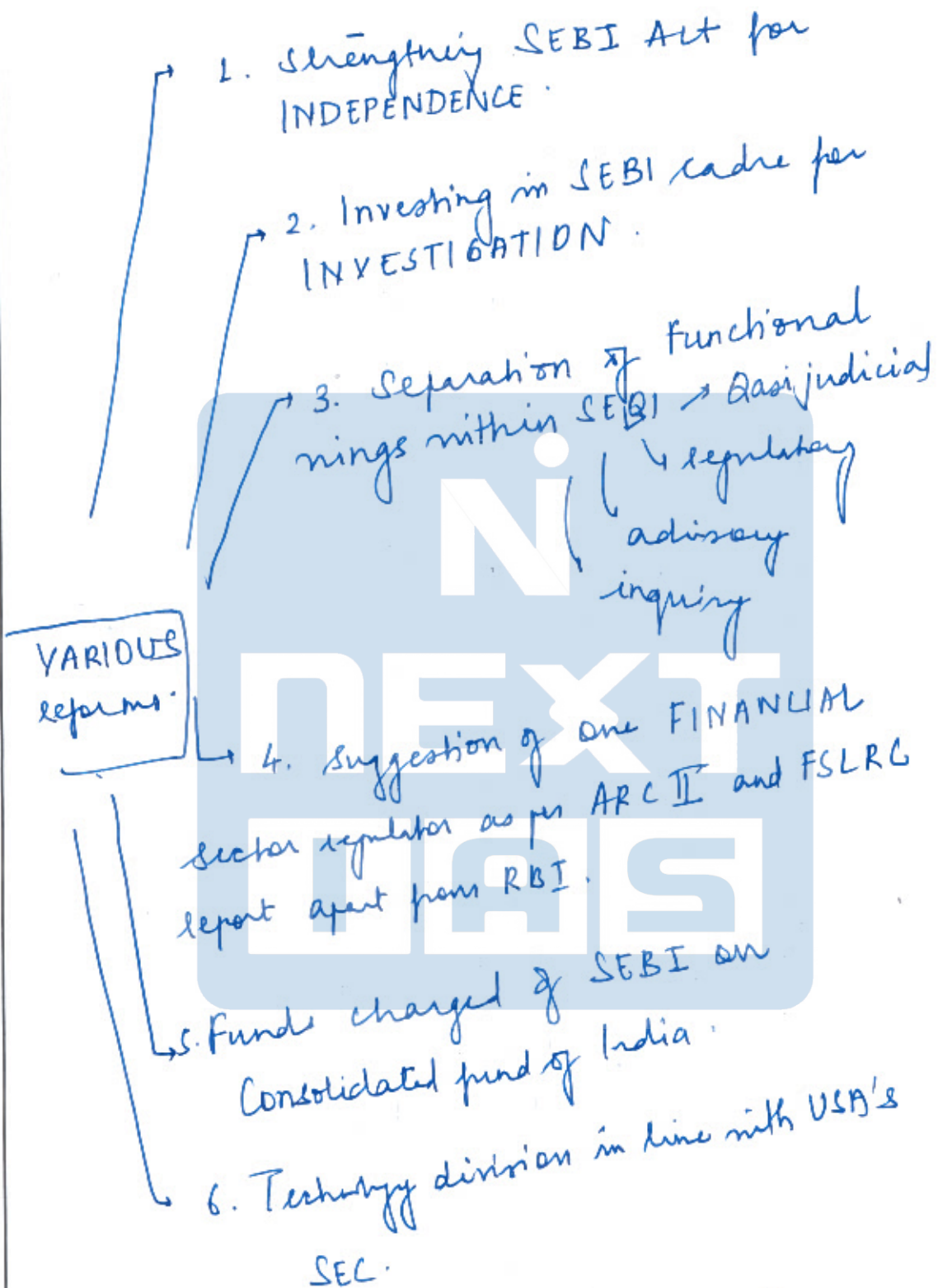
→ limited personnel for INQUIRY & INVESTIGATION with experience.

→ question on INDEPENDENCE due to MINISTRY of finance dependent funding.

→ large role with limited domain expertise ex: FORWARD markets commission merged in SEBI.

→ lack of technology wing for rising changes.

→ DOMAIN overlaps with RBI, IRDAI, PFRDA, IEPFA, CCI.



hence, SEBI's active vigil is core for rising FII inflows and sustaining India as bright spot in global economy.

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 contributes to 18.26% of gross value added to INDIAN GDP, 46% of total employment & 70% of all rural employment.

It is rightly called Backbone of INDIAN economy.

① LOWER yields despite 2nd largest agricultural land.

ex: INDIAN		Australia
rice	1500 kg/ha	3000 kg/ha
wheat	2600	3600 kg/ha

② lower Mechanization at 35-45% as per NCAER

CHALLENGES faced by Agriculture sector

③ High level of land fragmentation as per Agri census, 1.15 ha of land while 86% farmers in INDIA own land below 1.08 ha.

④ limited adoption of Quality seed and seedling material

ex: HYV seed replacement rate at 23%.



⑤ limited financial capacity for Pest control and fertilizers.

ex: Urea costs as heavily tilted against small & marginal farmers.

⑥ lack of agricultural marketing and APMC monopoly, transport to APMC.

ex: TOMATO inflation while farmer selling 4 Rs/kg

⑦ ISSUE of Middle men and Apathyas or lower farmer price realization.

⑧ lack of cold storage, infrastructure leading to losses worth 17% produce as per UNEP Food wastage report.

in this context, World Economic forum termed "Technology" as needed revolution for AGRICULTURE growth

1. Precision agriculture for YIELD growth.  
ex: Nano urea of 240ml - equally 40kg as per IFFCO.

2. mechanization technology in enhancing productivity of land and reduce disguised unemployment  
ex: Custom hiring centres in Punjab.

3. technology can help in leading to Economies of scale.  
ex: AI sowing app & ODPDP for regional bargain power.
4. SOIL health cards, sensor technology for enhancing seed quality
5. Technology of GM crops, biopesticides, Zero Budget Natural farming  
ex:  $\beta$ -carotene in golden rice for NUTRITION security
6. developing <sup>FM-</sup>KISAN app, Kisan sridha app, e-NAM are for stronger agriculture marketing [ONE NATION one market]
7. Launch of KISAN drones, KRISHI udan facilities can help farmers in enhancing INCOME. (DALWAI committee)
8. role of FPOs, JLGs, SHGs in creating food processing, cold storage can reduce DISTRESS sale.

thus technology as enabler needs sustained investment keeping farmer literacy, awareness, along with stronger penetration in regional languages to achieve VISION of Resilient & Climate Smart Agriculture.

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

Irrigation refers to activity of timely and needed water for crop growth in agriculture cycle for EFFECTIVE yield generation and in turn, farmer income.

ex: Gross irrigated agricultural land is 48%. and rest is "GAMBIE or MONSOON"

IMPACT of IRRIGATION on ENVIRONMENT

→ Irrigation ensures protecting LOCAL ecosystem  
ex: ISRO's Land degradation ATLAS shows desertification

→ Irrigation helps in PLANT growth with nutrients

ex: Water as medium for Micro nutrients (Calcium, Selenium, Boron)

→ it ensures Agro-climatic pattern

ex: monoculture of rice-wheat have led to GHG emission (FAO), change in local climate.

Irrigation is also crucial for Biodiversity protection  
 ex: Important Rhizopora, legume bacteria need sustained water.

Irrigation reduces need for higher use of Fertilizers, Herbicides, as per ICAR study

**IMPACT OF IRRIGATION ON NATURAL RESOURCES**

INDIA'S rainfed agriculture has led to GROUND water depletion  
 ex: INDIA extracts 30% of global ground water

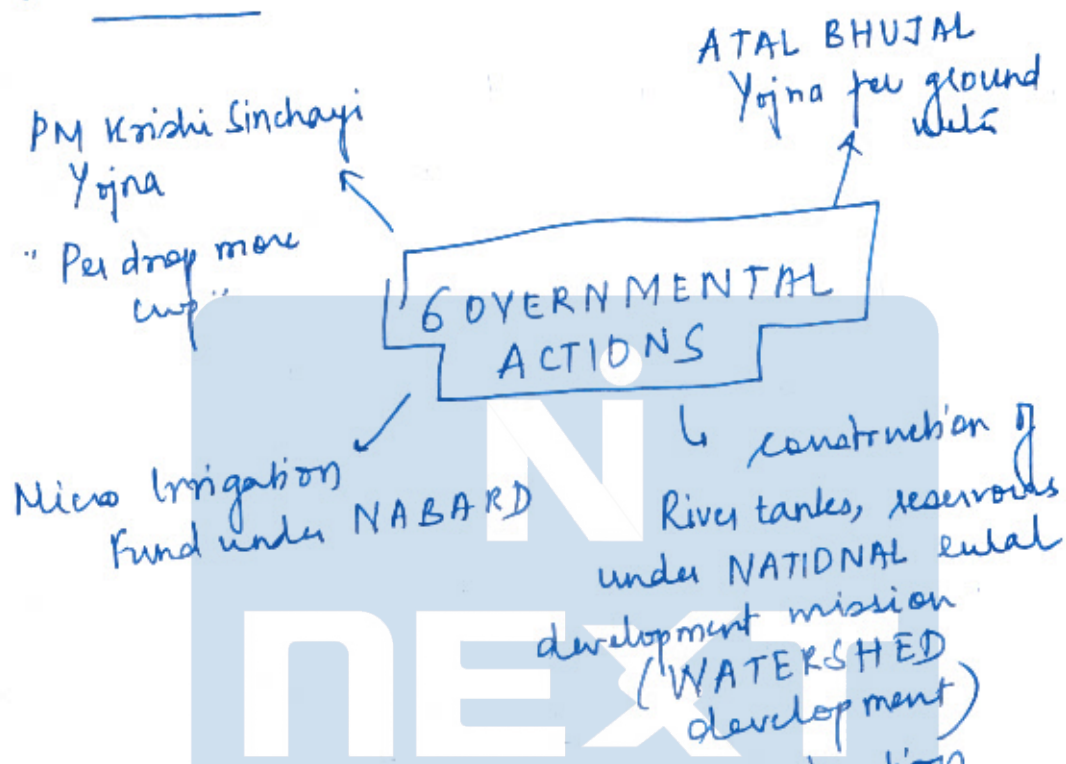
Irrigation practices have led to SOIL erosion, loss of fertility, Alkalinisation, Acidification and Salinization of SOILS  
 ex: Paddy waterlogging

↳ It has created stress on LAND as NATURAL resource.

↳ Irrigation practices are also linked to ground-surface water runoff, Eutrophication of Ponds, rivers and impact ecosystems  
 ex: WETLANDS in Punjab - High COD

↳ It is also linked to STUBBLE burning & AIR pollution.

STEPS needed for SUSTAINABILITY & EQUITY  
of IRRIGATION



- 1) Promoting PARTICIPATORY irrigation management for small & marginal farmer
- 2) Precision Irrigation in rainfed areas  
ex: Sensors, sprinklers
- 3) usage of Nano fertilizers in LIQUID form
- 4) Direct Seeding of rice over Waterlogging
- 5) change in MONOCULTURE to Agro-climate oriented irrigation.
- 6) strengthening IRRIGATION practices with awareness on yield.  
Thus sustainable irrigation helps in food security and water for future.  
(SDG 2 & 6)

Q.15 परमाणु ऊर्जा और अंतरिक्ष प्रौद्योगिकी के क्षेत्र में क्रमशः डॉ. होमी जहाँगीर भाभा और डॉ. विक्रम अंबालाल सारामाई 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 Sarabhai were PIONEERS of INDIA'S SCIENCE and TECHNOLOGY programmes.

Role of Dr. HOMI Jehangir Bhabha

He is known as Father of INDIA'S ATOMIC programme.

He lay VISION for India's 3 TIER or EVOLUTIONARY framework for INDIA'S atomic energy

1. Pressurised Heavy Water reactor using  $U_{235}$

2. Heavy Breeder reactor with PLUTONIUM

3. Reactor using THORIUM (abundance)

He led to enactment of ATOMIC energy Act, 1962

He held setting up of current day ATOMIC energy regulatory INSTITUTION (AERC)

He was INSTITUTION creator with

- 1) setting up TATA INSTITUTE for Fundamental Research (TIFR)
- 2) scattering lab in IISC
- 3) current day BARC, Mumbai is named after him

He spoke of need for stronger skill and self reliance

Today INDIA'S 1.8% energy comes from Nuclear energy and is Nuclear weapon enabled country with Dr Bhabha's strong foundational pillars

He led to INDIA prioritizing SPACE as a DEVELOPING country with SOCIAL needs

Role of Dr. VIKRAM Sarabhai

↳ led to creation of Department of SPACE as INDEPENDENT department (under J. Nehru)

↳ setup of ISRO's Sarabhai Laboratory in Physics at Ahmedabad.

4. Role in creating Thumba Rocket  
launching centre.

5. Pioneered ecosystem of ISRO for generation  
of scientists

ex: Abdul Kalam the MISSILE  
man.

6. Also creating INSTITUTIONS like  
IIM Ahmedabad.

7. He took over Atomic energy program  
post Dr. Bhabha's death.

Today ISRO as pioneer of efficient  
space programme and cost efficiency is legacy  
of Dr. Vikram Sarabhai

The Contributions of Dr. Sarabhai  
and Dr. Bhabha are role models for INDIA'S  
future vision as leading global power (INDIA @ 2047)

along with fulfilling need for broadband  
FUNDAMENTAL duty of "Fostering scientific  
temper" (AITS-1)



Q.16 जनरेटिव 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

Recent launch of CHAT GPT 4.0 by OPEN AI, BARD, DALL-E show the rise of generative AI which is capable of MIMICRY Humans like conversations

1. GENERATIVE AI is said to be REVOLUTION in Emerging technologies as per WEF.

POTENTIAL of generative AI

2. it holds potential for loss of 300 million CONTENT writing jobs as per ILO

ex: recent layoffs in lower white collar sector.

3. it can lead to stronger creative content

ex: DALL-E in generating PAINTINGS, images.

4. it can strengthen research work co-ordination

ex: INTER disciplinary research

5. strengthen potential for PRECISION education on VALUES of creativity  
ex: CHATBOTS and remedial classes.

6. it can lead to 24\*7 economies with REMOTE process automation blended with AI's customization

7. it can enhance LEISURE of individuals, fueling greater innovation as per WEF.  
ex: GREAT resignation like trends.

8. help in solving Mental health issues through ANONYMITY, privacy

However, its SOCIETAL impact raises challenges

1. 400 START UP founders including Elon Musk have asked for ban on generative AI due to SOCIETAL repercussions

2. AI trained on legacy data has SYSTEMIC Biases

ex: Google's Generative AI giving wrong results.

3. Generative AI accentuates DIGITAL divide between HAVES and have nots

ex: impact on poor, women & marginalised.

4. Lacks capacity for AUTHENTICITY and accuracy of data causing MISINFORMATION.

5. Lacks Ethical compass.

ex: AI in Education can lead to PLAGIARISM.

6. Lack of regulatory framework can lead to MISUSE of personal data

ex: Art 21 - Privacy judgement.

Thus, in this context, Generative AI needs global co-ordination:

- 1) With Big tech regulation on PERSONAL data ex: GDPR like regulation of Europe
- 2) role of GLOBAL Partnership on AI (GPAI) where India is member
- 3) Personal DATA protection law (B N Srikrishna Committee)
- 4) "AI for ALL" strategy launched by NITI Aayog.
- 5) RAISE framework for regulating AI for society.

hence balancing INNOVATION with effective regulation of AI is need of the hour.

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

Sharm El Sheikh COP 27 led to launch of "MANGROVE Alliance for Climate" (MAC) to protect fast degenerating COASTAL shock absorbers.

Purpose of MAC

→ SAFEGUARD Mangroves along Coastal shorelines.

→ in line with 30X30 Kunming-MONTREAL biodiversity protection targets.

→ Utilize MANGROVES protection for strengthening COASTAL sea level rise threats

→ GLOBAL co-ordination for BEST practices sharing on MANGROVE ecosystem

→ GEF fund facility for SUSTAINABLE mangrove conservation for least developed countries

in this context, Mangroves are coastal HALOPHYTES and are ecotone between LAND & SEA ecosystems

IMPORTANCE of Mangroves

- 1. Protect Coastal biodiversity  
as breeding grounds for fishes.  
ex: SUNDARBANS
- 2. COASTAL shock absorbers of TSUNAMI, cyclones.  
ex: Biparjoy on gujarat Coastal mangroves.
- ↳ 3. Help in maintaining COASTAL zone and level of SALT water intrusion  
ex: Pneumatophore of mangroves in NUTRIENT collection
- ↳ 4. SUSTAIN livelihoods of INDIGENOUS people with services like Food, Tree Bark, Fodder in VIETNAM, THAILAND
- ↳ 5. Cultural value of TRIBAL livelihood  
ex: BONBIBI in Sunderban as goddess.

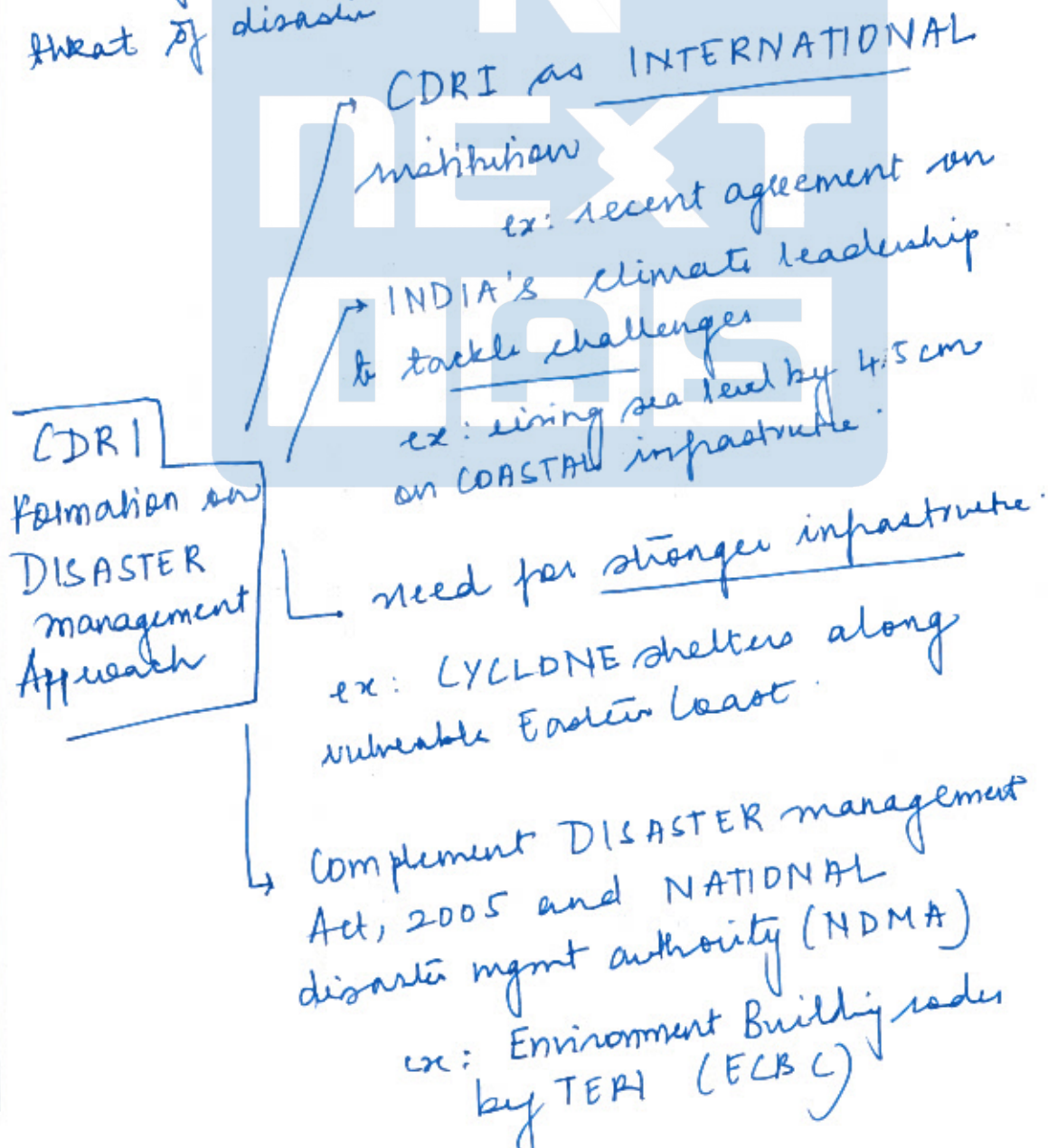
## Role played in COASTAL ecology

- 1) STRONG roots of mangroves help in COASTAL stability from TIDES, WAVES
- 2) Afforestation of mangroves helps in SHOCK absorption capacity from WINDS and WATER action  
ex: MISHTI initiative in Budget 2023
- 3) Protect Biodiversity of reach SDG 14 LIFE under SEA
- 4) ECOTONE area in WATER purification, SAND settlement (REGULATING function)
- 5) ensure gradual change from FAST flowing rivers into SEA discharge  
ex: Sunderbars in Ganga discharge.
- 6) Eco tourism ex: Sunderban white tiger
- 7) Carbon sequestration  
diverse role of Mangroves as "stabilizer" of coastal ecosystem must be sustained with Research, Conservation and Region-specific approach  
ex: INDIA - Bangladesh accord for Sunderban

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  
 brings a stronger framework for DEVELOPING country like INDIA with 382 average population density and 48% geographical area under extreme threat of disaster.



CDRI as Research PLATFORM for bringing INNOVATION

ex: usage of local Bamboo in North East infrastructure.

Build on GLOBAL Best practices in line with SENDAI risk reduction framework

ex: NATIONAL Platform for disaster risk reduction [NPDRR]

→ UTILISE G20 working group on CDRI for ACTIONABLE items.

→ linking CDRI to INDIA'S diplomacy ex: CDRI - IRIS linkage,

CDRI - FIPIC link

WHAT more is needed with respect to CDRI for Robustness

↳ Bringing technology transfer through NEGOTIATION with Global north

↳ AMPLIFY CDRI solution to global south

ex: India-Japan's Africa-Asia growth corridor to use CDRI R+D

↳ Mobilizing Climate change funds, loss & damage funds as per Sharm-el-sheikh Plan for implementation.



also CDRI must be LOCALISED with effective involvement of Gram Sabhas, P.R.I, URB, Aapda Mitras, Civil Society for ACTIONABLE steps

NEED for NEWER strategy to tackle DISASTERS :

- 1) Rising impact of climate change  
ex: cyclone on West coast - BIPARJOY
- 2) Non-conventional threats and threats from ungoverned spaces  
ex: cyber attacks on Nuclear or atomic energy installations
- 3) Enhanced need for EARLY warning systems  
ex: SIKKIM sensors for monitoring Glacial lakes against GLOFS
- 4) impact of cryosphere melting and Earth quake zones in North India  
ex: Joshimath subsidence
- 5) utilising data for Proactive disaster mitigation  
ex: Prediction on Turkey earthquake.

Hence, PM's 10 Point action agenda must be utilised for Decentralized and dedicated DISASTER risk reduction (Sendai Framework)

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

Recent incidents of Ransomware on All India Institute for Medicinal Science (AIIMS), attack on OIL INDIA. have led to pressing need for Stronger Cyber Security.

① As per GLOBAL cyber security INDEX - INDIA is top 5 vulnerable countries with 2,00,000 threats per day

② RANSOMWARE attacks have become DECENTRALISED & digitally hybrid threats

ex: WANWACRY, PETYA

③ INDIA's fast rising middle class and Disposable incomes

ex: INDIA's middle class to touch 300-400 mn by 2026 (NITI Aayog)

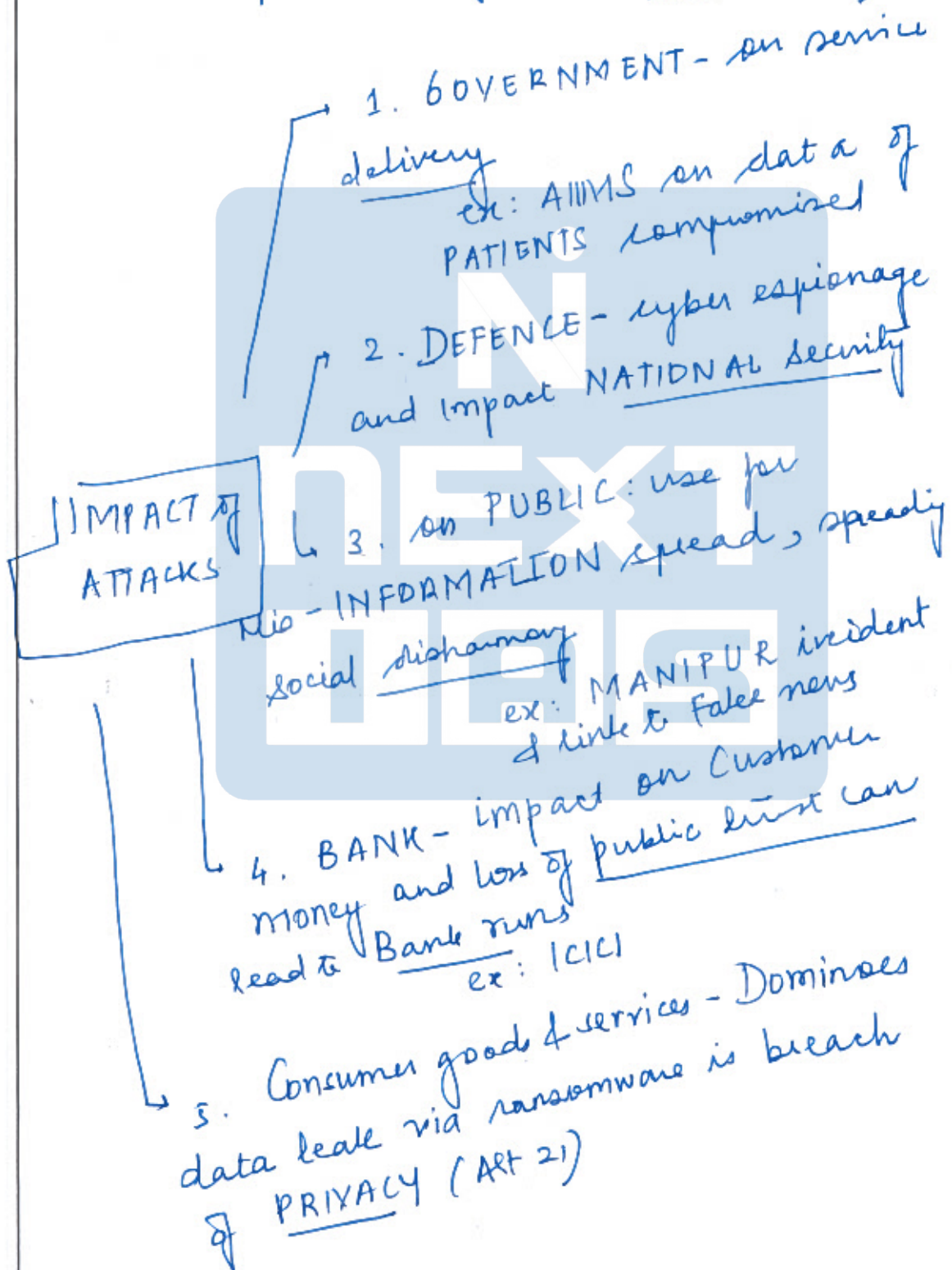
④ GLOBALIZATION and rise in digital skills

ex. Ransomware attacks from remote places ex: Power sector attack to China.

KEY FACTORS for Trend.

⑤ enhanced SMARTPHONE & Internet Penetration

ex: JAMATARA as cyber crime Capital, rise of MEWAT (inter state border areas)



6. ATTACK on Communication & Power sector can impact ECONOMY

7. LAZRUS group on Kudankulam plant could have led to NUCLEAR attack and CATASTROPHY.

MEASURES needed to strengthen CYBERSECURITY

1. IMPLEMENT NATIONAL Cyber security policy (2016)
  - Protect, Promote Incentive Companies for Cyber Security
2. INSTITUTIONAL strengthening of
  - CERT-IN
  - NCCC
  - NCHIPC
  - Cyber Swachhta Kendras
  - Kerala's cyber dome project.
3. Incentivise shongar ledrunal with ETHICAL hacking
  - ex: COVIN portal updation on OSS mode.
4. DIGITAL literacy of CITIZENS
  - ex: only 2/3rd are literate as per NSO.
5. Cyber NARI project to protect women, vulnerables (NARI roshni)

Hence India's improvement to 10th in Cyber Index must be upheld with PROACTIVE policies, enhanced Budapest Convention recommendation for global good.

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?

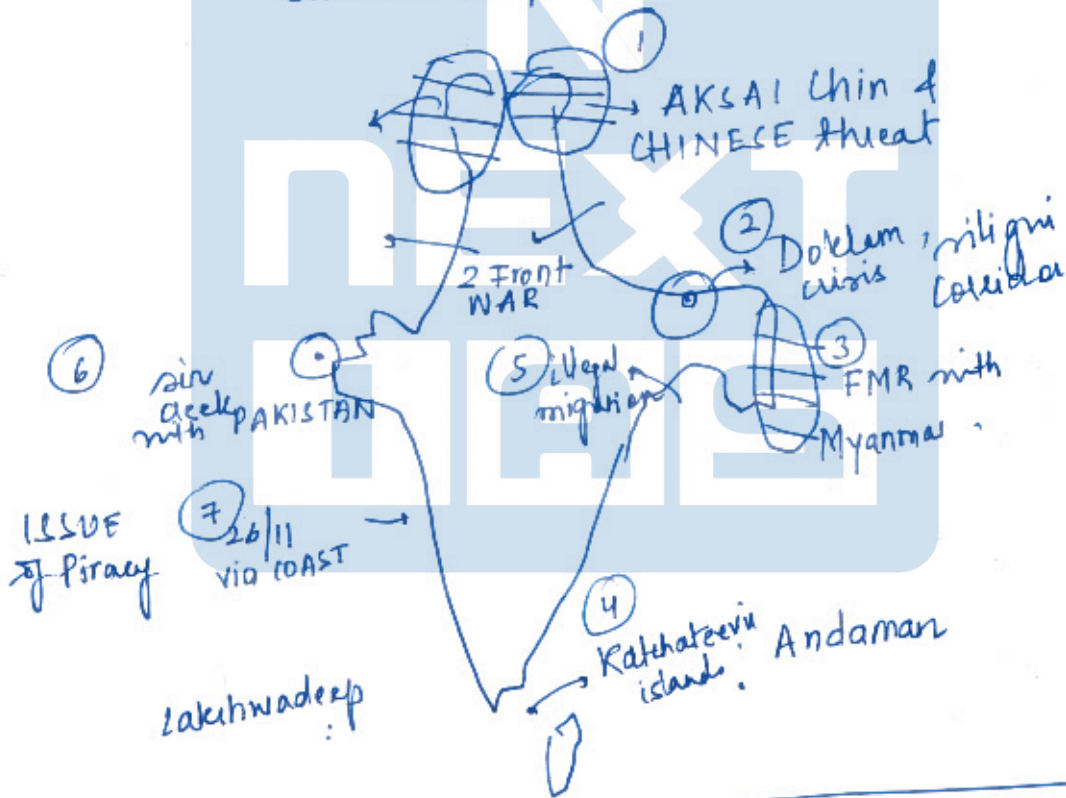
(250 शब्दों में उत्तर दीजिए) 15 अंक

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 with 7516 km seastline and large list of land border needs to prioritise BORDER security for upholding UNITY, INTEGRITY and TERRITORIAL soverignity.

Current Day - Border ISSUES



in context of issues, there is need for stronger Border Co-operation & co-ordination, as per SHEKATKAR committee; ARC II.

3 Tier mechanism.

ARMY

↓  
Border Guarding Forces

ex: [ SAHASRA Seema Bal along NEPAL, BHUTAN ]

↓  
STATE Police in Border DISTRICT.

EFFECTIVE co-ordination can ensue

LAND Border SECURITY

1) TACKLING illegal MIGRATION

ex: ROHINGYA INFLOX

2) COUNTERFEIT products that impact economy

3) GUN running along PAKISTAN border

ex: UAV for dropping weapons

4) closeness to GOLDEN Triangle, Golden crescent which are Drug Havens  
ex: NASHA Mukta Bharat Abhiyan.

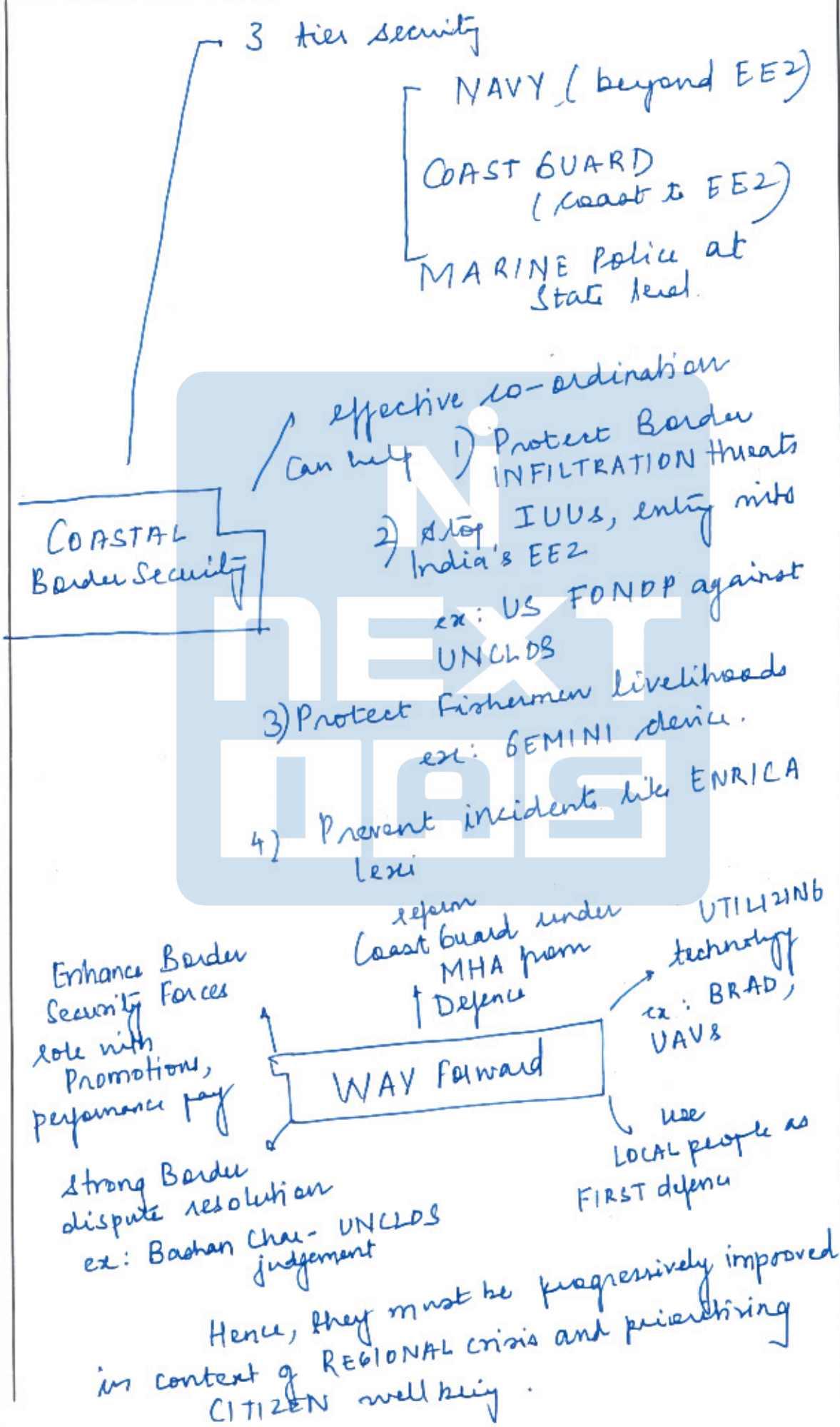
Co-ordination and Cooperation with

1. VIBRANT VILLAGE programme

2. BRD for INFRASTRUCTURE

3. implementing CBIMS ex: geofencing PATROL via BSF.

4. NATGRID for intelligence.



Space for Rough Work

Candidates must not  
write on this margin

