

NEXT IAS

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(To be filled by candidate)

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Code : TC705

RCA Batch 2023

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SUBJECT/PAPER
GENERAL STUDIES

Invigilator's Sign. : 

[To be filled by the STUDENT]

Student's Queries for the Evaluator (if any write them below)

[To be filled by the EXAMINER]

Evaluator's response

(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



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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

~~Wind~~

Taxation is the economic glue that binds the state and its people in a social contract.

windfall tax refers to the taxation in which the tax revenue increases sharply according to windfall gains.

windfall tax is a fn of

- Tax Elasticity
- Tax Bouyancy
- Tax Rates in Progressive Taxation

Windfall Tax → ~~Redistribute~~ ~~tax~~ ~~wealth~~

1. Redistribute wealth & promote economic equality

a) Through redistribution through subsidies to poorer section.

b) Taxing the rich by 30% Corporate tax & tax exemptions to poor
 → Agriculture not taxed

c). Act like the Levelev

↳ Progressive taxation system is
direct tax followed in India
with multiple tax slabs

It. However there are challenges

a). Indirect tax (GST) is tax on the poor
which is regressive.

b) Windfall tax may discourage the
entrepreneurs to promote business beyond
a point.

c). Middle class exit from tax paying
due to poor quality service

d). More than 90% belong to unorganised sector
outside tax net

Hence the way forward is to promote

taxation keeping in mind the 4 Canons

ie E = Efficiency in tax collection

C = Compliance

E = Effectiveness.

C = Comfortable tax Rates.

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 is the mandate provided to RBI under RBI Act- 1935 through Monetary Policy Committee (MPC)



Inflation targeting Band → $4 \pm 2\%$ for the next 5 years i.e. till 2026

Success of inflation targeting

1. Limits fixed for benign inflation which is good for economy
2. Accountability of MPC in case breach of target along with ways to curb inflation
3. Ensures monetary policy transmission by linking inflation targeting to policy rates
by Repo; Reverse Repo

However challenges are

1. Monetary Policy not independent of ~~first~~ fiscal policy of govt
 ↳ subsidy; govt welfare schemes
2. Blackswan event out of MPC control
 ↳ COVID crisis; Russia Ukraine war → supply side inflation.
3. International developments outside scope of MPC-IT
 ↳ US fed tightening
4. Rigid target is $4 \pm 2\%$.

Hence the way forward is to create mechanism for → FRBM type Rule → for escape clause in case of Emergency

↳ Convergence b/w Fiscal & monetary Policy

↳ Clarity in the monetary Policy stance with certainty i.e. Calibrated tightening or neutral stance etc.

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

India is the bread basket of the world producing food surplus. still it lacks in nutritional security (South Asian Enigma).

↳ India is a Republic of Hunger
↳ (Utsa Patnaik)

Calorie security
Food security ↔ nutrition security
↳ Prevent malnutrition / obesity etc

Millet production, to promote sustainable Agriculture & food security:

① Nutrition through nutri-cereals

↳ Amaranth; Jowar; Bajra; Ragi.

② Enhance food productivity through land productivity by symbiotic agriculture

↳ Legumes + cereals.

③ Micro- and macro-nutrient deficiencies can be tackled

↳ Pulses → protein
Millet → Fibre

- (A) Nutrition for the poor due to accessibility and cheap cost-

Hence the measures that can be taken to promote millet are

1. Millet production through dry land farming @ Bundelkhand Integrated Farming
2. Millets → 2023 declared as International year of millets
3. Millet promotion through reform in PDS and MSP policy → procurement through PM AASHA scheme
4. PM-POSHAN to promote consumption of nutri-cereals.

Hence millets are the cereals of future to promote Zero Hunger (SDG-2), Health for All (SDG-3).

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

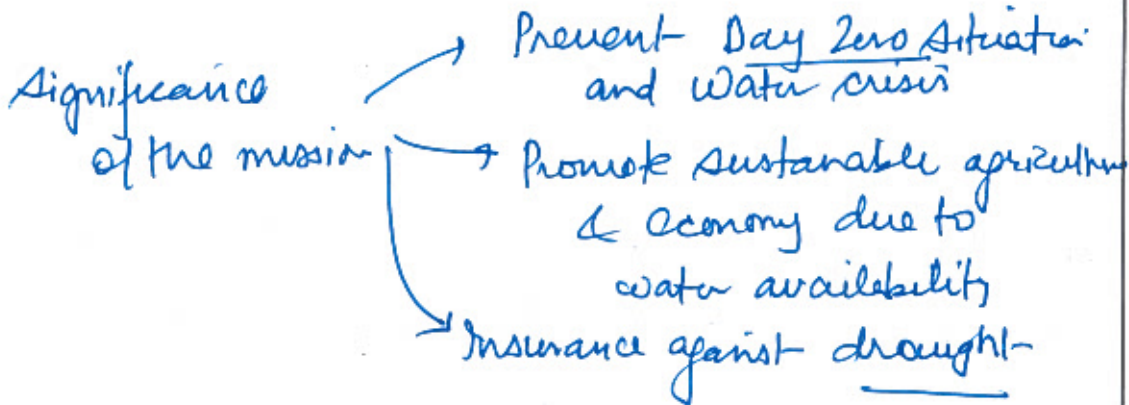
Around 46% of the Rural Households in India do not have piped drinking water

— Natar Risk Atlas (2014)

In this respect, Jal Jeevan Mission (JJM) by Ministry of Jal Shakti launched in 2019 can promote water governance

Jal Jeevan Mission ⇒ Potential to End Regional disparity in availability & accessibility of water:

- 1) Piped drinking water to all Households by 2024. through Har Ghar Nai Se Jal Scheme
- 2) Grey Water management for water reuse & recycle
- 3) Water Conservation & Rainwater Harvesting and Community Participation.
 Ex: Amrit Vatika in UP.
4. & Ground Water Recharge by water Harvesting structures Ex: Bunds, Afforestation.



Impediments:

1. Overuse & Exploitation in Agriculture —
— Paradox of GW being invisible
2. Water pollution due to sewage discharge, inadequate ~~socio~~ treatment
3. Costly Sewage treatment infrastructure
4. Awareness generation among local population and burden on scarce resource (Gr. Water → 16% population of the world)

Hence the way forward is to promote GWM through Jan Andolan with

- ↳ micro/bio remediation for grey water management
- ↳ Community level awareness through Panchayats
- ↳ Afforestation using Miyawaki model

making the Invisible - Visible (World Bank for Ground Water)

Integration of GWA & CWC for integrated planning (as recommended by Mihir Shah Committee)

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

NTI Aayog has come up with Batter Gogy & Swapping Policy - to overhaul the energy infrastructure in India

Battery Energy Storage System (BESS)

- Decentralised energy storage
 - Enhanced energy mobility
 - Diversify sources → non-conventional energy
- eg Fuel Cells; Hydrogen fuel cells;
Li-Ion Battery; Ni Cadmium Battery

Applications to Revolutionize Energy programme of India

1. e-mobility: to revolutionize the transport sector & decarbonize transport
eg Scooter Batteries in e-vehicles
2. Space missions
Use of Battery for longer functioning of satellites

3. Electricity to unelectrified rural Households
Key Decentralised solar batteries in
Rural India
4. Use of Battery during power intermittency
in grid integration.
5. Storage of non conventional fuel Key ^{Green} Hydrogen
nuclear batteries

Hence the battery storage systems can help in
digital revolution along with the way
to make India a developed country by
2030.

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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 the mission for space probe to promote research in space technology.

Developments

- Gaganyaan to be launched in 2024
- testing phase of Crew module
- To take Humans to space

Challenges

- Technology transfer from developed countries
- R&D budget of only 0.65%.
- India
- Challenge of space debris due to increased space competition
- Inadequate participation of private players with expertise

Benefits of Gaganyaan mission

1. Generate avenues for space research
by Big Bang Hypothesis; other galaxies
to understand evolution of Earth
2. Employment Generation through space
docking facilities in the International
Space Station
3. Developments in the indigenous science
& tech → to know how space Information
can be used in our day to day life
4. Industrial developments through promotion
of ancillary activities
5. Boost private sector participation in
space activities
by Skyroot.

Hence Gaganyaan can help in the overhaul
of Space technology in India

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।

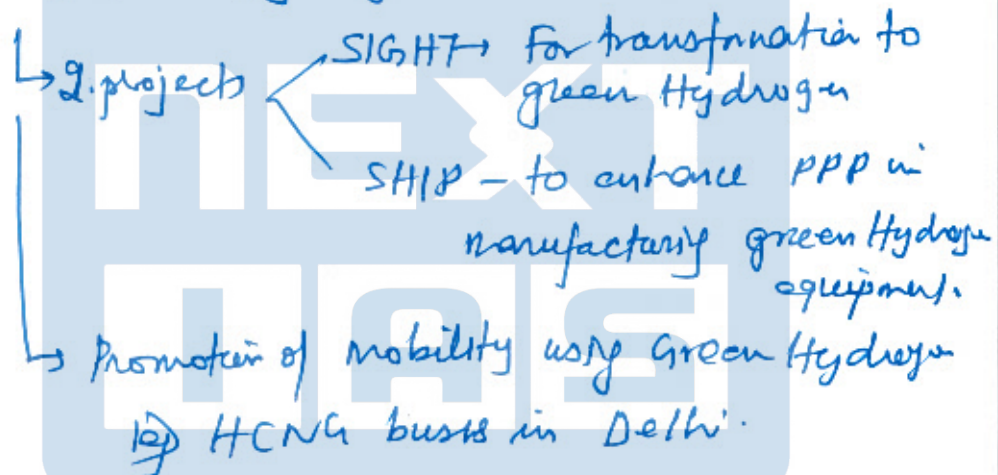
(150 शब्दों में उत्तर दीजिए) 10 अंक

"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 refers to the energy from breaking the bonds of H_2O to H_2 & O_2 to produce Hydrogen energy using solar & wind energy.

In this context India has come up with National Green Hydrogen Mission



Green Hydrogen Silver Bullet in tackling climate Change & pollution

1) Clean Energy with only Heat & ~~Hydrogen~~ ^{Vapor} as by product.

2) Production of Green Ammonia → for Industrial developments by fertilizer, Petrochemical Industries → Green Economy

3) Reduce pollution ~~due to~~ from SO_2 ; NO_x emissions $\Rightarrow$ Hydrogen fuel cells in vehicles

4) Promotion of Energy security by renewable

^{Sources:}
5) High Calorific value $\rightarrow$ Energy efficiency $\rightarrow$ less pollution
However the challenges are

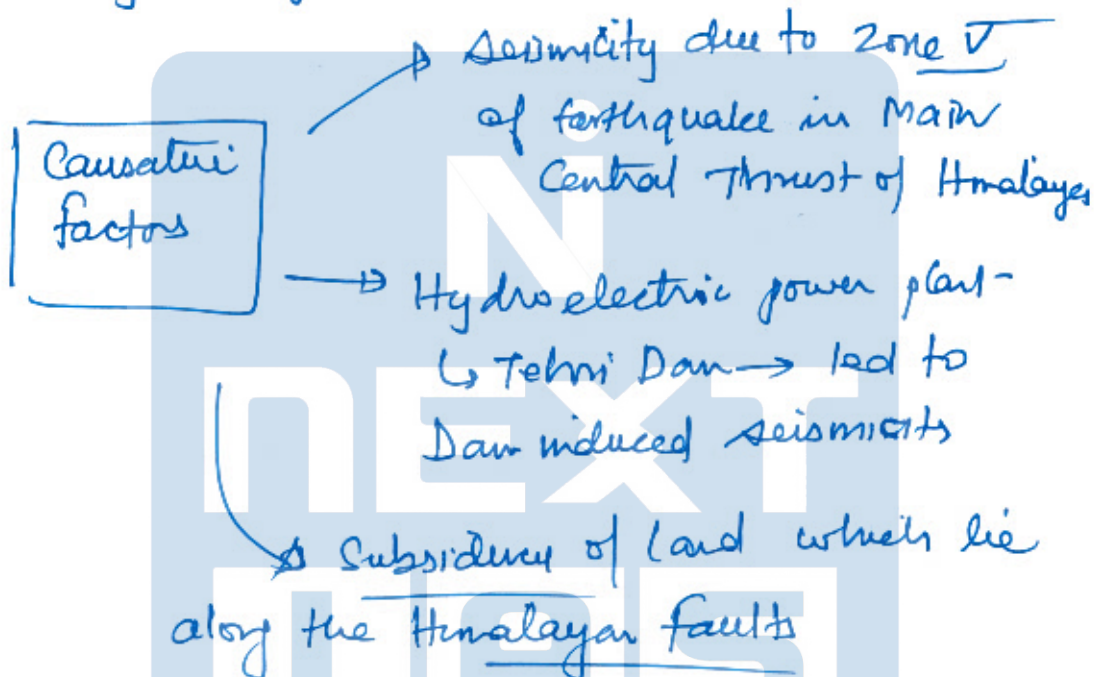
1. Import of electrolyzers $\rightarrow$ 90% of the electrolyzers are imported
2. Storage Infrastructure $\rightarrow$ as Hydrogen is inflammable; toxic and dangerous fuel
3. Lack of PPP & technology support for indigenous manufacturing.
4. Monopoly in the solar & wind market which is used in Green Hydrogen } - costly
 Δ Only Borosil providing glass for solar panel
5. At present Hydrogen prepared is mostly grey hydrogen

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 recent Disaster of Joshimath (Uttarakhand) puts into limelight the vulnerability of Himalayan region to disaster



Key lessons for Disaster Management & Environmental Conservation

- ① Integrated planning - ie pre disaster, post disaster & during disaster
- ② Early warning ; Rehabilitation

④ Conservation of Himalayan Flora:

- Natural plantations along Himalaya to reduce risk of landslides.

③ Settlement Plans - to plan safe settlements along with tourism planning

② Participatory Approach - For Community involvement to as early warning; weather observers.

⑤ Dedicated Institution & Policy for the Comprehensive disaster management

Hence Disaster management should be based on Build Back better as per Sendai Framework

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





- 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





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

Indian Panchamrit goals on environment and electricity demand has led to the need to promote Electricity Amendment Bill 2022

Advantages of Electricity Amendment Bill 2022

- i. For Consumers
- ① Free to purchase electricity for different operators of their choice
 - ② Do not bear burden of electricity inflation due to DISCOM / GENCOM NPAs

ii. For DISCOMs

1. Rationalize and reform Renewable Purchase Obligation market.
2. Promote efficiency and Competition due to open market sale

iii. Environment:

1. Reduce electricity wastage
2. Enhance grid integration → Energy & environment security
3. Reduce e-waste through long transmission channels

Shortcomings

1. Freedom to purchase electricity from any gencom / DISCOM may lead to hoare trading & market disruption
2. May lead to closure of many DISCOMs
3. Overall effect on Consumers due to negative competition & ~~but~~ increased electricity charges due to monopolization
e.g. As done by SIO in telecom sector

Measures Required

1. Reforms in DISCOMs through RAMP scheme to enhance competitiveness
2. Diversify electricity basket - from coal dependence to non-conventional sources like Green Hydrogen; Solar, wind
3. Creation of Robust Market mechanism for electricity bonds.

4. Provide decentralized power in inaccessible areas. $\rightarrow$ Rural areas - Rooftop Solar for electrification
5. Promote energy efficiency through BIS & EESL

Thus Electricity being a concurrent list subject requires Co-ordination from both centre & state to promote energy growth.

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- Q.12 भारतीय प्रतिभूति एवं विनियम बोर्ड (सेबी) शेयर बाजार के नियमन और निवेशकों के हितों की सुरक्षा में महत्वपूर्ण भूमिका निभाता है। दिये गए कथन के आलोक में, सेबी के समक्ष आने वाली चुनौतियों पर प्रकाश डालिए और इस संबंध में सुधारों का सुझाव दीजिये। (250 शब्दों में उत्तर दीजिए) 15 अंक

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

Security & Exchange Board of India (SEBI)
is the Corporate Bond Market Regulator of
India established and formalised in 1990s.

Role in Regulation of share market-

1. Regulate the sectors getting FDI and FPI
2. Regulation of Institutions like Mutual Fund; REITs; INVTs to protect Investors
3. Clear guidelines for investments in Alternate Investment Funds, Sweat-equity; Angel fund; Hedge funds.
4. Use of Algorithms to prevent disorderly trading using satellite technology at BSE & NSE in Dalal Street.
5. Regulation of Stock brokers; Companies trading in secondary market.

Challenges faced by SEBI

1. No clear definition of ~~Alternate~~ Alternate Investment funds (AIF) SEBI only regulates it
2. No Interdepartmental Coordination in inflow & outflow of FPI.
3. Inefficiency to regulate Hot money through FPIs.
4. Inadequate Infrastructural Support with Staff training.
5. Inefficiency to regulate corporate market -
Scams like
- Vatyan Scam;

Reforms Required

1. More penal powers to SEBI to regulate brokerage & Bond market
2. Recommendation of HR. Khan Committee for Corporate Bond market reforms
3. Autonomy to SEBI in regulating investment funds
4. Promotion of Social Impact Bonds - Green Bonds

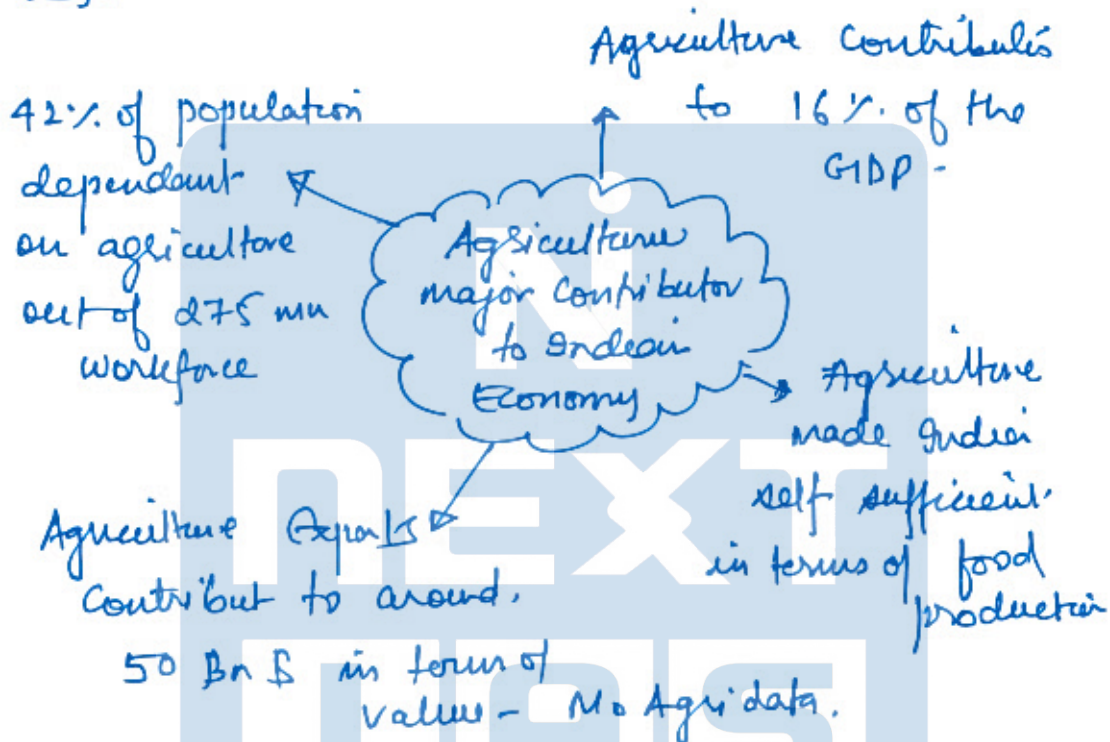
Hence the Corporate Bond Market - requires
an overhaul for economic growth &
stability to make India a 5 trillion \$
economy in 2027



- 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

Indian Agriculture system is the way of life in India.

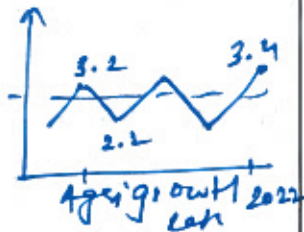


Constraints in the development & growth of Agriculture

- ① faulty cropping patterns with monoculture of wheat & Rice ; Irrigation intensive agri in drylands.
- ② Feminization of Agriculture due to male migration.

② Land fragmentation

↳ Avg. Farm size is 1.08 Ha³
reduce productivity



④ Small and marginal farmers-

↳ More than 85% of the farms are small and marginal

③ Technology fatigue

- No Breakthrough in technology since green revolution. HYV, tractors etc

⑥ South Asian Region

- despite of being a food surplus country large prevalence of hunger & malnutrition due to neglect of nutri-cereals.

⑤ Inadequate value addition due from horticulture, oilseeds, millets etc

⑦ Inadequate forward-backward linkage for promotion of food processing industry leading to post harvest losses.

⑧ Issues of Amber box subsidy & sanitary & phytosanitary measures in agricultural exports

Role of Technology

1. Precision agriculture
↳ Drip & sprinkler irrigation for reducing runoff; water wastage
2. Use of drones
- for sowing; seeds; GPS to track
movement of agri produce
3. Aquaponics & Hydroponics
- To overcome land fragmentation & shortage and boost productivity
4. R&D through ICRAR for nutri-rich cereals.
↳ Promotion of fig cultivation in Rajasthan by ICAR
5. Agriculture Revolution (3.0) → To promote digital and create smart agriculture
↳ AI based Agri Pad for soil Health Card.

Hence technology can play a crucial role in enhancing agri productivity & promote food security

- 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

In India around 40% of the land is under irrigation in the farming system.

Irrigation : ~~Flood~~ ^{Tubewell} Irrigation > Canal > Tank
43% 24% 4%

Impact of Irrigation

1. On Natural Resources

1. Land: - Reduce land productivity due to flood irrigation in Rice fields
2. Ground Water - depletion
In Punjab GW depleted to 150 ft against ideal 50 ft
3. Agri Resources/food
↳ dilution of nutrient concentration due to excessive water use.

4. Energy Resources

- ↳ 85% of the electricity/energy is used in irrigation (NOSP1 data)

On Environment:

1. Soil erosion - sheet- and gully erosion
due to surface irrigation
 2. Leaching of fertilizers & pesticides in
ground water
↳ Fluoride pollution in Punjab-Haryana
 3. Construction of Irrigation Infrastructure
leads to land use change → alter
the Biogeochemical / water cycle
↳ Indira Gandhi Canal in Rajasthan
changed Rain/micro climate
-
- Measures to ensure sustainability & equity
-
1. Micro Irrigation Structures - cost effective
↳ drip & sprinkler irrigation
 2. R&D to ensure efficiency
↳ Precision farming → Irrigation efficiency
is 85% compared to 30% for surface
water use
 3. Watershed/landscape approach
↳ small check dams instead of
large gravity dams

4. Agro climatic Planning

↳ Dryland agriculture in parts of Bundelkhand & organic farming

5. Local Rainwater Harvesting Structures

↳ Tanks; Bunds in Rajasthan
Amrit Sarovar in parts of Uttar Pradesh

6. Afforestation to promote soil moisture; (Wapasa)

7. Promotion of Wetland agriculture

↳ Kuttanad Below sea level farming

8. River Interlinking for Hydropower & Irrigation on a local scale

↳ Ken Betwa Link Canal to provide irrigation to 10,000 Ha land in UP & MP

Hence ~~the~~ sustainable irrigation is crucial to make Indian agriculture productive & for doubling farm income & enhance food security i.e. SDG-2 (No Hunger.)

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

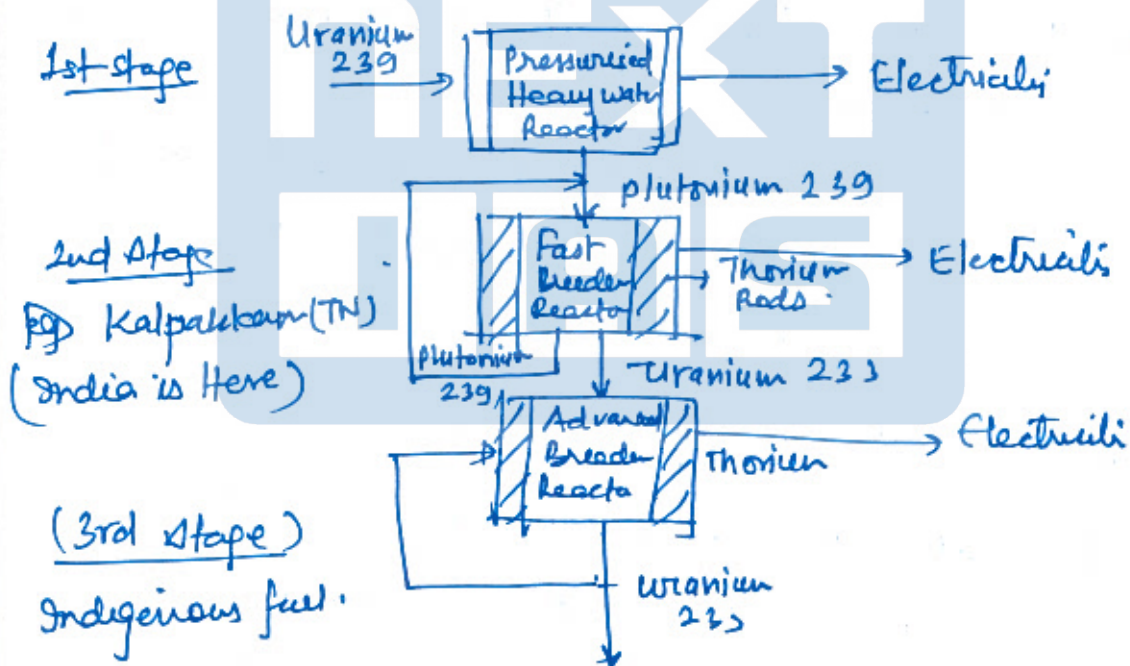
How India benefitted strategically from the contributions of Dr. Homi Jehangir Bhabha and Dr. Vikram Ambalal Sarabhai in the fields of atomic energy and space technology respectively?

(Answer in 250 words) 15 Marks

Indian Scientists have played a crucial role in the promotion of science and tech in India.

Contributions of Dr. Homi Jehangir Bhabha

- India's ~~own~~ nuclear energy programme with self sustaining 3 stage plant to reduce import dependance



Benefits

1. Reduce India's dependency on Imported ~~new~~ fuel.
- 85% dependency of India on crude oil inputs at present
2. Promote Energy diversification and energy security
3. Reduce political volatility risks of West Asia $\leftarrow$ Current account deficit
4. Promotion of green & clean energy
5. Research in other fields
eg Cyclotron; Nuclear medicine, etc

Contributions of Dr Vikram Sarabhai (SPACE Tech)

$\rightarrow$ India has become a global leader of pragmatic space technology due to his contributions.
& ISRO.

eg India launched 104 satellites from PSC/C37 in 2017

Benefits

1. Promote dependence on indigenous technology.

eg Chandrayan 3; Lost Cost Mars orbital mission (MOM)

2. India 4th country for soft ~~landing on moon~~
landing on moon → promotion of R&D.
3. Space probes → Employment generation;
↳ Research in Interplanetary mission
eg Higgs boson particles; Chandrasekhar limit
4. Communication through satellite
eg GSAT 7 & GSAT 7A for air force &
Navy "Eye in the Sky"
5. Remote sensing satellites for weather prediction,
planning; Disaster management-
eg Resource sat-2; Ocean sat-2
6. IRNSS system for GPS navigation and
AIS tracking for traffic management-

Hence these developments are watershed
moments in the development of
India in the era of IR-4.0 to make India
Self Reliant @ 2047 i.e. Amrit Mahotsav

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

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

Artificial Intelligence (AI) is the technology of IR 4.0 to promote breakthrough developments in society, economy & other spheres of life

Potential of Artificial Intelligence

1. Economy: To prepare models for developments
 ↳ AI based models to predict growth sectors

2. Education
 ↳ Use of AI for Customised Learning experiences → eg. Chat GPT by OpenAI

3. Agriculture
 → To promote precision, climate smart-agriculture
 ↳ Agri Pad - AI based device by startup Agrostar to check Soil Health

4. Health
 - AI based Robotic surgery, bloodless surgery ; telemedicine etc.

5. Industrial / Automation - for mass production.
 ↳ 3D printing for masks during COVID
 "AI" AI

6. Defense and Communication:

↳ AI based simulations / models to create a digital force along with surveillance (CIBMS).

However there are concerns of substantial challenges

1. Jobloss due to automation

- As per WEF there is a threat of 1 crore job loss due to robotics

2. Impact on mental Health

- due to reduced physical, mental activity
↳ Chat-GPT making the function of human brain redundant.

3. Creation of biological caste by racial profiling by AI based data collection.

4. Increase Inequality

• As per Thomas Picketty Report AI may lead to labour market polarization with High skill & low skill low pay jobs

Thus, technology is a good servant but a bad master. Therefore the way forward is to promote more R&D for productivity and sustainable use of AI through interventions such as-

1. NITI Aayog's RAISE programme → For Responsible AI
2. Centre of Excellence for AI in IITSC Bangalore to promote socially Relevant Research in 5 priority sectors (Water, Agriculture; Education; Infrastructure & Skill development).

- 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

Mangroove Plantation are coastal forests in the swamps, bog, fens etc which act as a source of rich biological diversity.

However the degradation of mangrooves have led to international effort through "Mangrove Alliance for Climate" launched in COP-27

Purpose of Mangrove Alliance

- 1. Reclamation of degraded mangrove plantations
- 2. Afforestation through collective efforts
↳ CDM in developing countries
- 3. Promote mangrove as shield for future climate change due to its ecosystem services
↳ Biological diversity/Biogeochemical cycle
4. Mangrove against-disaster
Resilient → ↳ Protection from Coastal floods

Importance of mangroves in Coastal ecology

1. Supporting services

- ~~For~~ Maintenance of ecosystem support through biogeochemical

cycle; Water Recharge; Water purification water cycle.



2. Economic services

- Through Food; Fodder; fuel; fibre
- Ap Sonneratia; Kawolfia plants for fuel production

3. Ecological services

- I Habitat for wildlife.
 - Ap Royal Bengal Tiger in Sunderban
- II Hotspot of rich micro-fauna.
- III Buffer against salt water intrusion and coastal Tsunami & cyclones
 - Ap 2004 Tsunami - Kerala coast not much affected due to mangroves
- IV Coastal micro-climate regulation.

4. Aesthetic Service

- ↳ Sacred mangrove grooves in swamps
Tribals in Odisha → ~~Kuttaka~~ ^{Koraput} below
sea level agriculture.

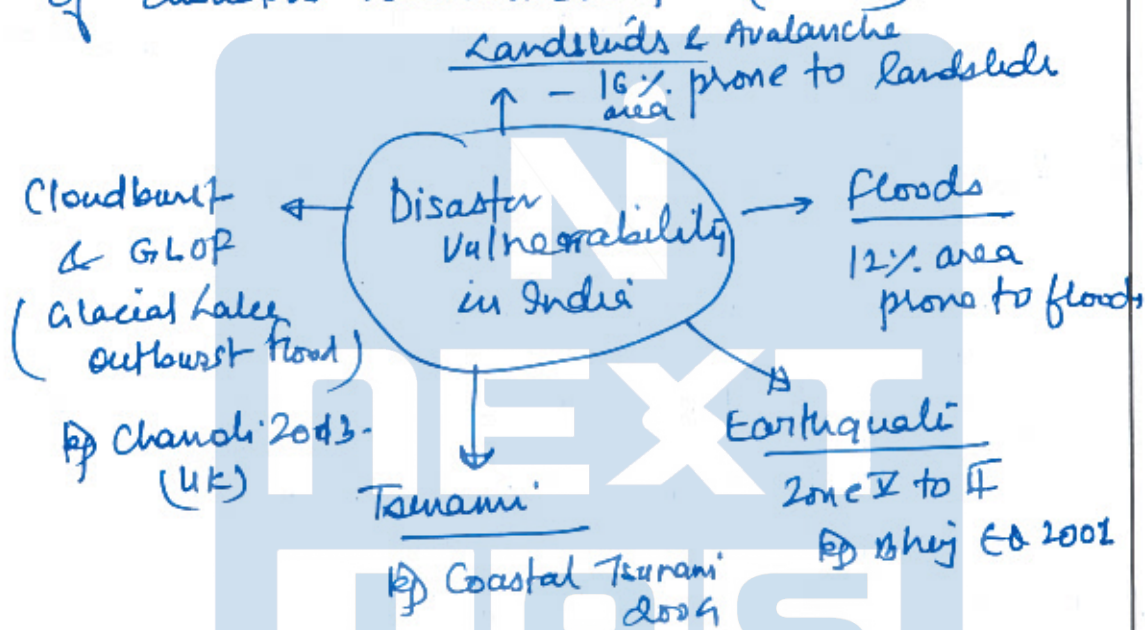
Hence it is important to promote mangroves.
various other initiatives by India which can be
implemented include:

- ↳ Coastal Regulation Zones (CRZ - II)
including mangroves.
- ↳ mangrove plantations through
afforestation
- ↳ Mangroves for future Alliance.

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

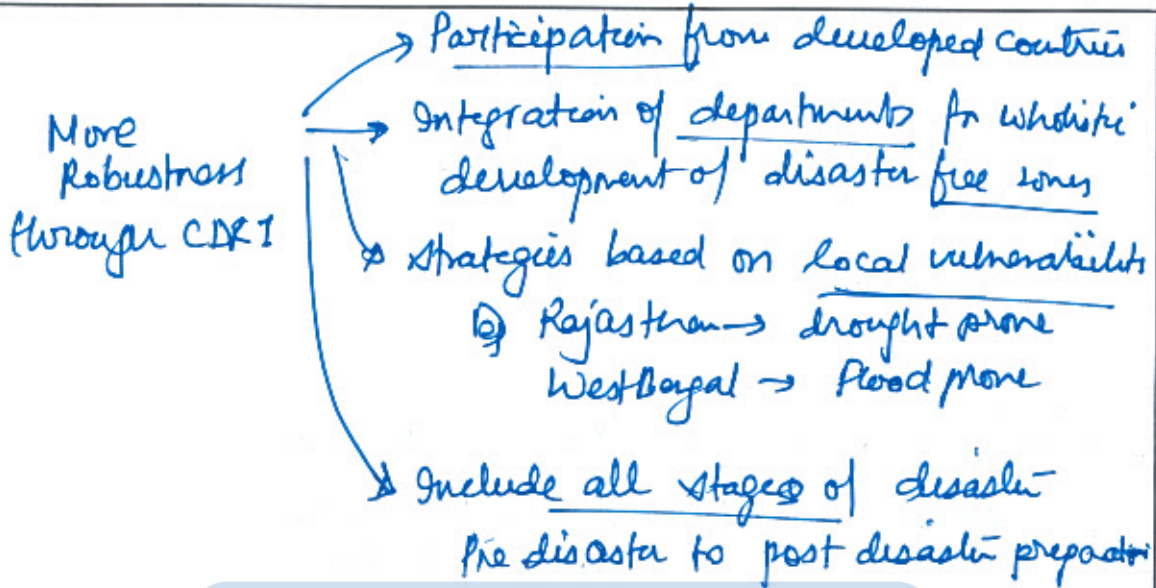
The Formation of the Coalition for Disaster Resilient Infrastructure brings more robustness to the Disaster Management approach in India. Comment and justify the need for a new strategy to tackle Disasters in India. (Answer in 250 words) 15 Marks

India is one of the top 10 countries in terms of disasters vulnerability. (ICRO).



CDRI - Coalition for disaster Resilient Infrastructure is the initiative by India & France to promote disaster Resilient-Infra especially in the developing countries against the vagaries of climate-induced disasters

↳ Sea Level Rise → Vulnerability of small Island nation (V20)



Need for New Strategy to tackle disaster in India

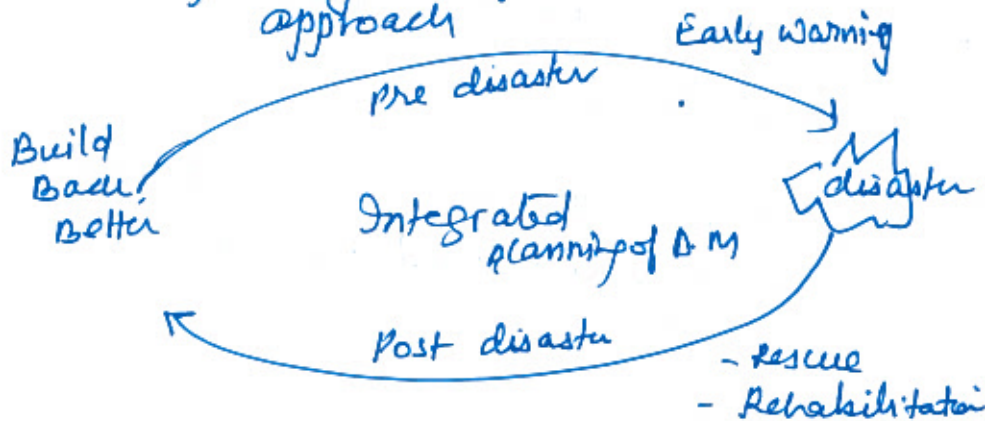
1. New forms of disasters coming up :

eg Biological ; chemical ; climate induced disasters
like heatwave ; pollution dome

2. Changing intensity of disaster.

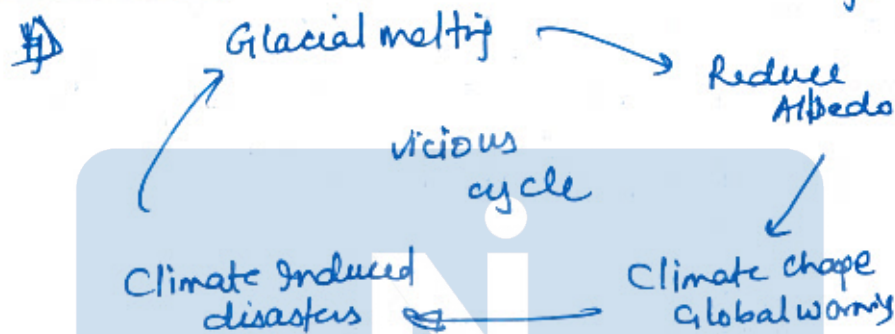
eg Arabian Sea getting more prone to cyclones compared to Bay of Bengal

3. Disaster management is to be included in planning itself at all stages for life cycle approach



4. Digital Revolution is to be utilized for better disaster planning
 ↳ Satellite data; drones; apps etc

5. ^{To} Reduce the effect of vicious Cycle/loop require wholesome approach



Hence the way Forward is to have an approach which includes

- Participation — of local community
- Responsive — approach for quick redressal
- Integration of NDMA ; SDMA & DDMA
- Technology like Early warning system
- Interministerial Co-ordination

↳ Along with sandai framework for build back better.

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

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

(Answer in 250 words) 15 Marks

The recent- Cyber attack on AIIMs surge creates a concern of cyber security in the critical infrastructure of India.

Factors contributing to such trend

1. Easy Accessibility to technology like blockchain, social media; ICT.
2. Anonymity due to cross border cyber attacks
3. Use of dark web & deep web for easy transactions without surveillance
4. Rising awareness about- technology & developments → use of technology as a weapon
5. Digitization has increased the vulnerability of such infrastructure
↳ Digital India → data to be digitized

Impact of these attacks on various sectors

1. Economy : Can disrupt the economic & financial systems
↳ SBI data breach case
2. Health Infrastructure
↳ AIIMS data attack
3. National security
↳ Pegasus snooping case against private data base
4. Critical Infrastructure like Railway / Roadway / Air
↳ 1. IRCTC data leak case
↳ Kandler port data hacking case
5. Defense security
↳ defense equipments like drones; could be made malfunctioned.
6. It can disrupt energy security
↳ cyber attack on Kudankulam Nuclear power plant

This requires the need for an urgent & stronger cyber security policy.

Measures & policies : National Cyber Security Policy

1. Better surveillance and coordination
↳ IAC ; National Cyber Coordination Centre
2. Inclusion of data privacy through
↳ BN Srikrishna Committee Recommendation for data Privacy Law.
3. Robust Financial Intelligence through
Digital Intelligence Unit (DIU) &
Financial Intelligence Unit (FIU)
4. Indigenous manufacturing through PLI scheme
for reducing risk of HUAWEI type threats
5. Cyber & Digital Saksharta to follow
Cyber Hygiene → use of NGOs / Civil Society

Hence Cyber Security is very crucial
in the phase of IR 4.0 to make India
truly digital @ 2047 (Amritkal).

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

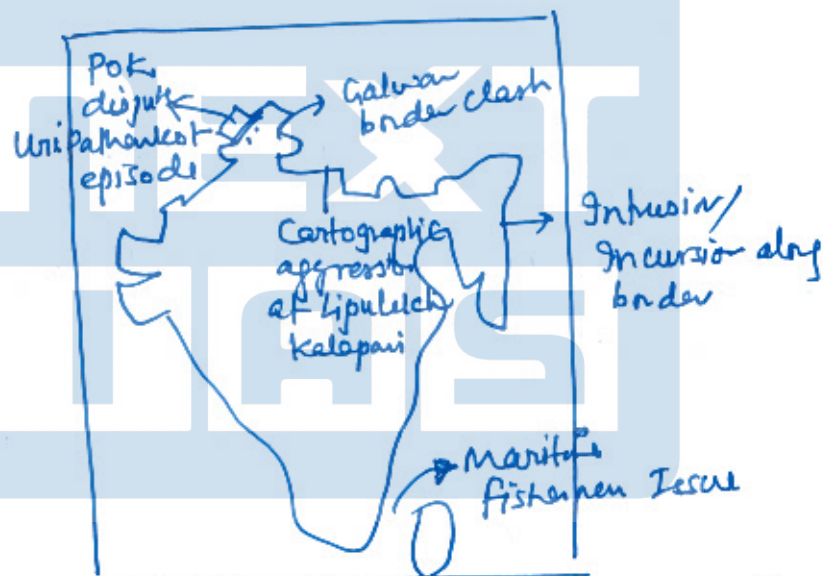
In the context of border security, how can cooperation and coordination between different security agencies be improved to ensure effective and efficient management of coastal and terrestrial borders?

(Answer in 250 words) 15 Marks

One can change its friends & enemies but-
cannot change its neighbours

— S. Jaishankar

India is surrounded by various hostile neighbours like ~~and~~ China & Pakistan which creates border security threat.



Border Security → including terrestrial & maritime security

encompasses security from

- ↳ territorial disputes.
- ↳ drug/human trafficking along border
 - ↳ Kutch Coast - Drug trafficking
- ↳ Illegal Immigration etc

Security Agencies for Co-operation & Co-ordination

1. Indian Army : For border management - in key strategic areas.
2. Border Security Force - BSF along Pakistan & Bangladesh Border
3. Sahasra Seena Bal (SSB) along Nepal Border
4. Indo Tibetan Border Police (ITBP) along NE border with Myanmar
5. Coastal & marine police (state) + ~~in~~ Coast guards

Measures to promote Co-operation & Co-ordination

- ① Integrated Battalions - using Airforce + military + Navy.
- ② Smart forces using technology to create ready to mobilise force
- ③ Integrated Theatre Command for integrated leadership
 by Joint Theatre Command of Andaman & Nicobar
- ④ Inter-Agency training & deputation for wholesome training of the security forces
- ⑤ Mobilization of the local communities along with force to create a force of simultaneous defense.

Case Study Mumbai 2008 attack may be attributed to disintegration of Indian Navy ; Indian Coast guard and marine police who were in Silos.

Apart from Co-operation & Co-ordination further measures that can be taken include

- S - Surveillance of borders
- E = Engagement through cross border talks
① Indian BSF + Afghan security forces
- C = Comprehensive border security policy
community participation (Project SABHARNA)
- U = Utilization of border resources; Relief & Regional development
- R = Responsive approach ① Border Haat
- I = ICT for surveillance
- T = Technology like satellite
① DRDO OIT along Assam Border
- Y = Youth engagement
① Agnipath Scheme

Space for Rough Work

Candidates must not
write on this margin

