

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

[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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DONT'S

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2. Do not write anything other than the actual answers to the questions anywhere inside your QCA Booklet.
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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.
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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 are a mechanism to ~~reduce the tax~~ the disproportionate ly high profits assimilated by a startup or a corporate in a particular financial year.

↳ they are administered if their income is 30% more than the recorded income.

Arguments to say that windfall taxes can redistribute wealth and promote economic equality

① Progressive taxation
↳ It can reduce inequality in income

② ~~Red~~ Reduce tax evasion
↳ by startups through tax exemption provisions.

③ Promote domestic players such as MSMEs.
against disproportionate profits
accumulated by unicorns and deltacons.

④ Ensure equitable growth

Issues

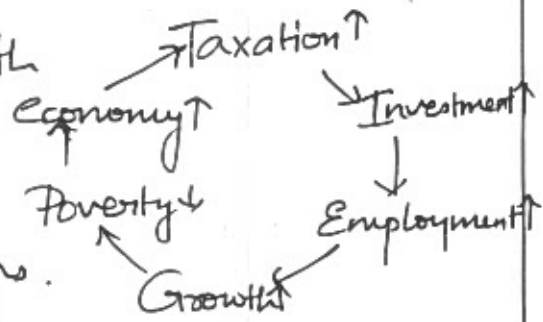
① Deter growth of startups.

② Disincentivise investments

③ Leads to the case of missing middle
where economy dominated
by micro and small enterprises

④ Difficult to administer
as it is a direct tax reform.

Wharf tax of 15% can actually
promote tax compliance and increase
fiscal prudence of India's rising startup
and Corporate sector.



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

MPC was established in 2016 with 6 members 3 from RBI and 3 from government, after amending RBI Act, 1934 to ~~enable~~ empower the body for inflation targeting.

Successes

- ① Accountability of body to Parliament for its performances
- ② Meets twice a year to better monitoring and Coordination
- ③ ~~Better~~ Prevents policy gaps in inflation targeting
- ④ Able to contain retail inflation within the limits until 2019 (around 6-7%)

Challenges

- ① Focus limited to CPI (monthly).
- ② WPI remains high unabated (14% in 2023 April).
- ③ Too much inflation targetting deter growth
- ④ Rise in inflation despite measures in 2023, showing the incompetence of MPC as inflation depends fiscal factors too
Eg- Tomato price reached ₹200/kilo in 2023.
- ⑤ Doesnot have participation from other bodies dealing with markets.

Way forward

- ① Improved market research.
- ② Inflation targetting based on budget impacts
- ③ Formation of Independent Fiscal Council

India needs an optimum level of inflation to cater to its growing economy.

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 focussing on millet production and development under ~~SR~~ SHRI Anna Scheme given in budget 23.

Potential of millets

I Sustainable agriculture

- ① Less water intensive
↳ drought tolerant
- ② Good for dry land farming
- ③ Needs less fertilisers
- ④ Diversity of indigenous varieties
↳ Reducing seed imports.

II Food security

- ① Rich in micronutrients
Eg:- Finger millets rich in iron, folic acid etc.
- ② ↳ Address hidden hunger.

- ② Reduced Cost of inputs,
↳ Better crop diversification.
- ③ Reduce groundwater use
↳ Increasing its
availability of for domestic use.

Importance measures

- ① 2023 International year of millets
by UN
- ② Promotion of millets under ~~SP~~ SHRI
Anna Scheme of Centre
- ③ Various State initiatives for millet
Cultivation.

Millet are coarse Cereals
and its adoption is important for India's
transition from a Cereal Centric Society
to a more healthy and diverse
food platter addressing malnutrition.

- 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 the flagship mission of Ministry of Jal Shakti with following Objectives

- ① Tap water connection to every village by 2022
- ② Functional tap water every Urban household in metropolitan areas by ~~2022~~ 2019 itself
- ③ Rejuvenation of watersheds and local sources
- ④ Single platform to monitor the efforts and to measure quality.

Significance

- ① 60% of India to face drinking water scarcity by 2030 (NITI Aayog).
- ② Growing ground water pollution

affecting people health.

- ③ Climate change and reduction in water availabilities - Regional disparities

Impediments

- ① Requires Centre State Coordination
↳ water is in state subject

- ② Concerns regarding the quality of supply

- ③ Interstate water disputes

↳ Lower upper riparian states not ready to part away with water

- ④ Does not address water pollution and overuse.

We should address the water scarcity through ITM without reducing our focus on behavioural change for sustainable use of water.

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 involve storage storage
mechanisms that uses batteries for
saving renewable energy & generated
for future use.

It can be centralised as well as
dispersed.

Applications

- ① To augment power generated
- ② ~~To~~ In energy exchange markets, for
sale and exchange of power
- ③ For renewable power generators,
to sell it in open markets.
- ④ For individual users, to reduce
power variability.

Potential to revolutionize energy program

① Reduce variability of renewable power

Eg- Power can be utilised during low days where generation is less.

② Promotion of hybrid models in power generation

Eg- Hybrid plant in Kochi

③ Promotion of energy markets - for power purchase agreements

④ Ensures intermittent power supply.

Government has identified the importance of BESS and identified it under PLI Scheme as well as one of the priorities of Amrit Kaal in 2023 budget.

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

India is planning its first
manned mission under Gaganyaan in
2024.

Developments in Gaganyaan

- ① Human rating of GSL Mark III for the mission
- ② Re entry experiments
- ③ Vyomitra as the robot to assist the mission
- ④ Zero gravity training of Astronauts in France.
- ⑤ 3 Astronauts will be sent to low earth orbit (400km) for 3-5 days.

Challenges

- ① Lack of indigenous Capabilities
↳ for training and development.

- ② Debates on development vs Space Research
- ③ Limited financial resources.
- ④ Lack of expertise of ISRO in manned missions.

Possible benefits

- ① Scientific developments - in designing space suits, accessories etc..
- ② Global Collaboration between space agencies
- ③ India at the high table of 7 countries who conducted successful space missions.
- ④ Development of Space tourism.

It will also propel India's standing as a leader in space science and motivate youth to pursue science as a career.

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 has zero Carbon emissions ~~while with no potential~~ and it is often called as the 'fuel of 21st Century'.

Green Hydrogen as silver bullet to tackle Climate Change and pollution

① No moving parts

↳ generated from electrolysis of water

↳ Zero distribution losses.

② Reduce imports.

↳ It doesn't involve fossil fuels

③ Zero emission

↳ water as the only outcome

④ High calorific value compared to conventional fuels

Issues

- Storage - requires subzero temperature
- Transportation - Cold Chain infrastructure

- Huge initial investment
- Requires recalibration of engines.

National Green Hydrogen Mission

- ↳ 5000 Crore ₹ mission to propel India as a leader by 2027
- ↳ Promotes hub and spoke model
- ↳ Supports generation and distribution infrastructure
- ↳ Private participation in development

India identifies the potential of Green Hydrogen in meeting its emission targets identified under Panchamrit to be achieved by 2030.

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 faced Land Subsidence due to constructions in unstable land formed out of landslides resulting in disruption of livelihood.

Key lessons for the incident

I Disaster management

① Disaster zoning before giving construction permits

② Prevent construction in environmentally vulnerable areas.

③ Climate resilient and sustainable construction methods based on local expertise in Himalayas.

Eg - Bamboo Housing of Meghalaya

II Environmental Conservation

① Sustainable tourism

In Himalayan Ecosystem

Eg- Joshimath had large number of Hotels.

② Prohibit polluting industries in Himalayan Ecosystems

Eg- Increasing Landslides in Uttarakhand (2022).

Some important government initiatives

① Environment Impact Assessment as part of EPA, 1986.

② Mission Life to promote lifestyle changes.

③ Promotion of traditional Agriculture
↳ under Paramparagat Krishi Vikas Yojana

We should adopt innovative measures like User fee, Climate budgeting etc.. to protect Himalayan ecosystem.

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 issues like resurgence of Khalistan involves,

- ① Movements under radical Sikh leader Amrit Pal Singh to push for Khalistan
- ② Anti India activities by organisations like 'Sikhs for Justice' abroad spreading Khalistani demands.
- ③ Defacement of Indian embassy in UK with Khalistani flag.

Reasons

- ① Stagnation of Agriculture in Punjab leading to disillusionment in youth and unemployment
- ② Rise of anti India sentiments abroad.

③ Cross border support

④ Drug economy fuelling separatism.

Some measures to handle it

① Economic opportunities should be expanded to promote unity
- ~~E~~ Economic integration

② Bilateral measures with Canada and UK to reduce anti-State activities

③ Border surveillance to tackle narco economy

④ Solve interstate issues between Punjab and Haryana

Resurgence of Khalistan issue is more spontaneous and less mass based compared to that of 1980s.

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

India faced Challenge of drone attacks at Pulwama in 2019 and later at Balakot of Punjab.

Challenges of drone attack

I Anonymity

↳ Asymmetric warfare.

↳ Impunity to the attacker

↳ difficulty in tracking and tracing

II Ease of operation

↳ Access to technology

↳ High impact at low cost

↳ Difficult to detect with radars

Some measures include

① Use Expand portable radars at

borders

② ~~Not~~ Prohibit operation of drones at Strategic areas

Eg:- Indian Civil Aviation policy, 2011

③ No ~~to~~ registration, no take off should be implement

④ Improve our defensive Capabilities

Eg:- Rustom, Heron

India should master
~~the~~ drone Capabilities to improve
its Capabilities in modern warfare.

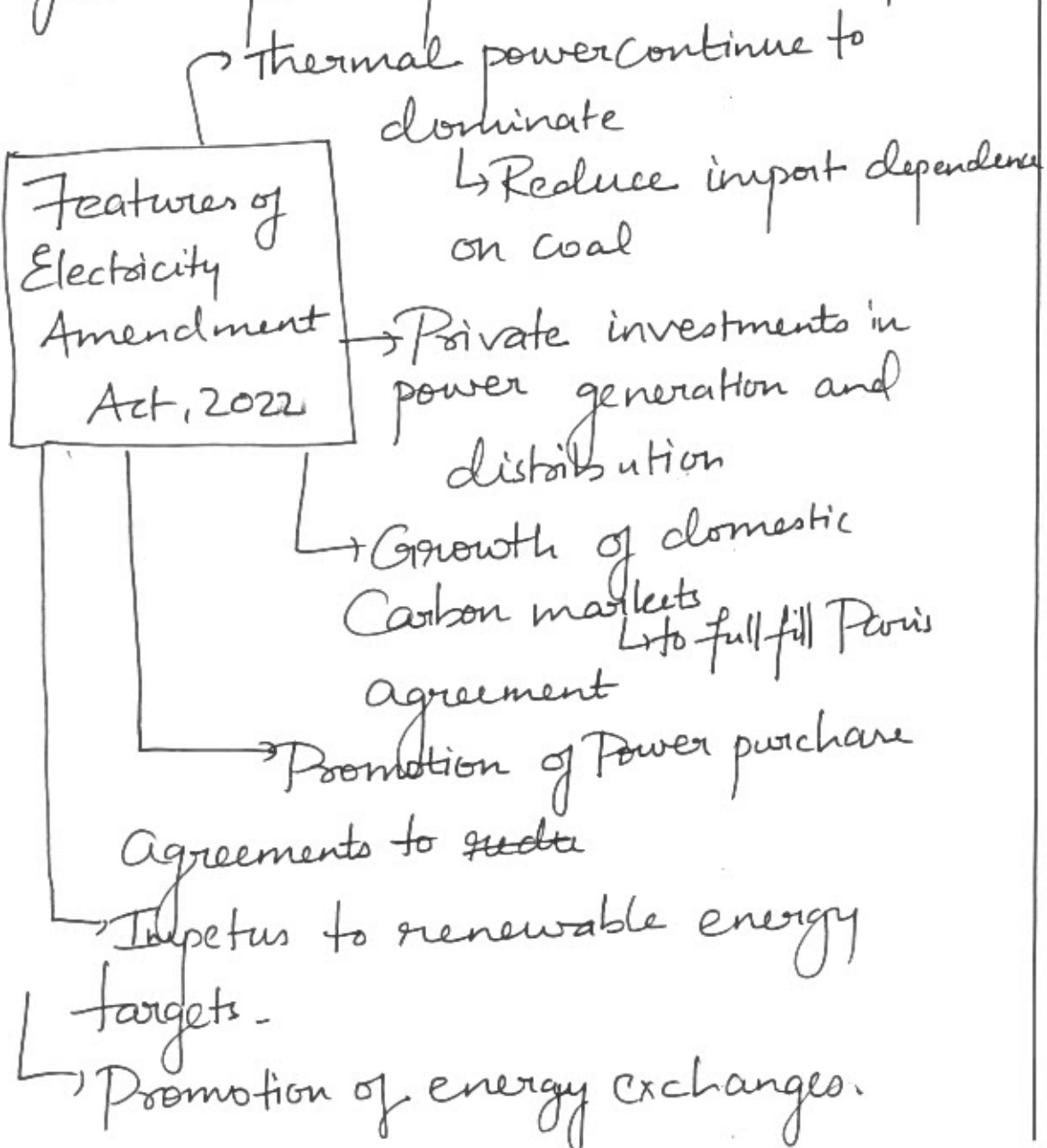
- Q.11 विद्युत संशोधन विधेयक, 2022 उपभोक्ताओं, डिस्कॉम के साथ-साथ पर्यावरण के लिए कई लाभ प्रस्तुत करता है। सविस्तार वर्णन कीजिए। साथ ही इसकी कमियों को भी सूचीबद्ध कीजिए और उन्हें दूर करने के लिए कुछ उपायों का भी सुझाव दीजिए।
(250 शब्दों में उत्तर दीजिए) 15 अंक

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 amends 2003 Act to assimilate the changes contemporary changes in India's power production landscape.



Advantages

- ① Concrete measures to overcome Discom losses
 - ↳ Targetted approach to reduce NPAs in discoms
- ② Central and State authorities to fix tariffs.
- ③ Promotion of Ease of doing business
 - ↳ Through transparent single window platform
- ④ Measures to promote renewable Energy
 - ↳ Carbon markets, dual use meters etc.

Challenges/Shortcomings

- ① Doesn't address the issue of Gross subsidies associated with renewable power purchases
- ② Private ~~part~~ participation might lead to inflation in power prices.

- ③ NO concrete measure to reduce Coal based power plants
- ④ Electricity in State subject - Affects Central - State relations.

Some measures

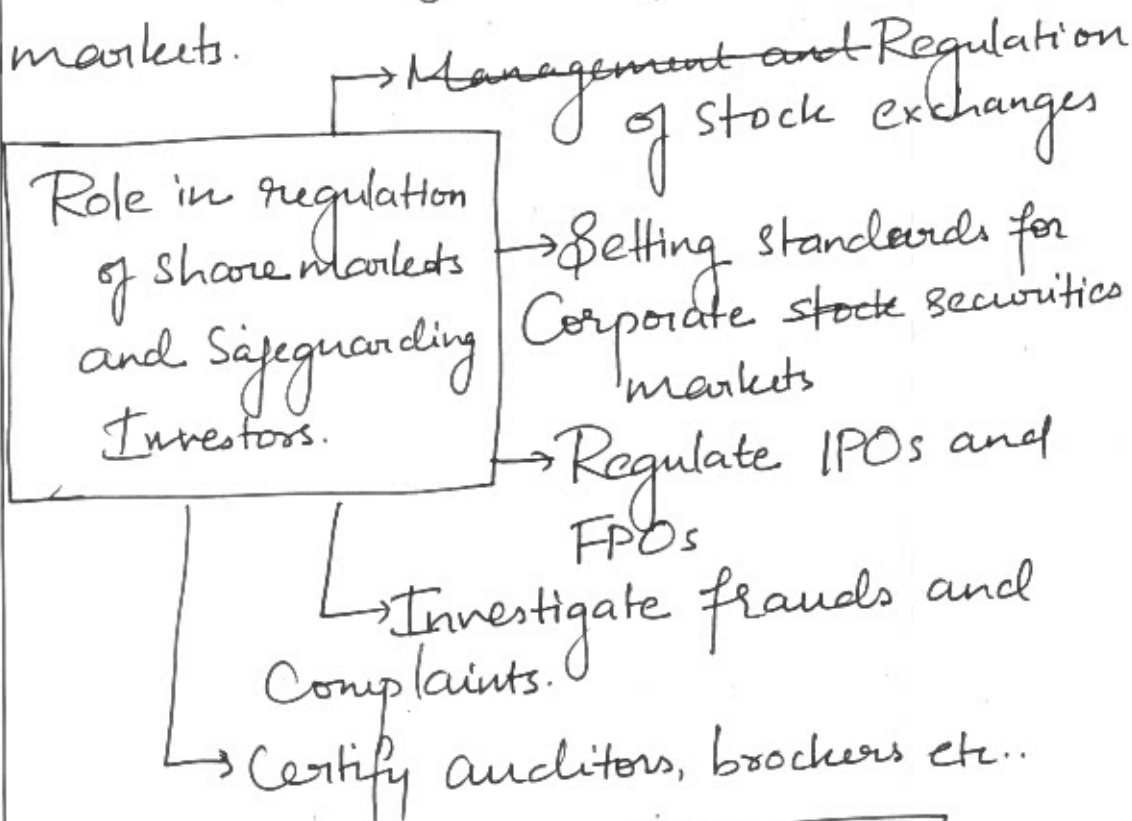
- ① Reduce transportation and distribution losses through localised small plants (AT&C)
 - ↳ India's AT&C losses $\approx 32\%$.
- ② PPP models in electricity supplies
- ③ Promote ~~per~~ hybrid models in renewable power
- ④ Growth of small hydropower to replace aging dams.

India should progressively shift from Coal to more sustainable means to attain net zero by 2070.

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

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

SEBI Act, 1987 formed Securities and Exchange Board of India as a statutory body to regulate securities markets.



Challenges Performance of SEBI

- ① Helped in the growth of credibility of Indian Stock markets.
 ↳ eg. BSE, NSE.

- ② Reducing Cases of Corporate frauds.
- ③ Introduced Latest developments and innovation in Stock markets
Eg- BEAMS of BSE.

Challenges of SEBI

- ① Financial frauds by and its inefficiency to prevent them
Eg- Harshad Mehta Scam (1990) defrauded investors of 1 billion \$.
- ② Issues within SEBI management
Eg- Chitra Ramakrishnan (2022)
- ③ Lacks autonomy - falling to political motives
 - ↳ Due to its statutory nature
 - ↳ Selective intervention
Eg- Adani issue.

④ Growth of parallel bodies
Eg. ICAI, FSB etc..

Some suggested measures

① Constitutionalisation of SEBI
↳ to increase autonomy.

② Promotion of Short selling in Indian
markets
↳ to promote financial propriety of
Corporates

③ Incorporation of external auditors

④ ~~Participation of~~ Interdepartment
Coordination between SEBI, IRDAI, RBI
etc.. to promote market discipline.
SEBI should be

Empowered to take suo motu
action against uncompetitive market
behaviours.

- 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 16% of GDP but 48% in employment showing the disproportionate nature of its contribution.

Contrast India's agriculture sector

- ① ~~La~~ Second largest producer of food grains
- ② ~~* Largest~~ Largest producer of horticulture
- ③ Second in dairy, fisheries and fifth in meat production.

Constraints of Agriculture Sector

① I Social

- ↳ Disguised unemployment
- ↳ Lack of irrigation (only 48% irrigated)
- ↳ Subsistence nature (64%)

II Economical

- ↳ Lack of food processing sector
- ↳ Lack of linkages.
- ↳ ~~IX~~ Regional disparities
- ↳ Lack of mechanisation (only 14%).

III Political

- ↳ Unsustainable food procurement leading to Inflation
- ↳ MSPs distorting cropping pattern
- ↳ Fertilizer subsidies — ~~lead~~ around 80000 Crores in 2021

Role of technology in overcoming these Challenges

- ① Agriculture extension services.
 - ↳ to provide instant information about latest developments to farmers
 - Eg- Krishi Vigyan Kendras of ICAR
 - Krishi deepam TV programmes.

- ② Drones
 - ↳ for applying fertilizers, monitoring

growth and to

Eg:- PM KISAN uses drones to decide insurance

③ AI and Sensors

↳ To measure soil health, diseases and Crop health.

Eg:- IBM partnership with govt to develop agriculture app.

④ Marketing

↳ Eg:- eNAM

⑤ Agribots

↳ To reduce ~~we~~ weeding, sowing etc.

& ↳ Reduces unemployment.

Government has identified the importance of Agriculture and technology and came up with initiatives such as KVKs, Kisan Credit Cards, etc. Soil Health Cards etc.

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, only 48% of land is irrigated underlying the importance of irrigation in agriculture.

Impact of Irrigation

On Environment

Positive

- ① Reduce overuse of through measures like precision farming
- ② Reduce cases of flooding by channelising water to irrigate farmland

Negative

- ① Water pollution and Salinisation of Soil
↳ due to over irrigation especially in Punjab
- ② Leaching of fertilizers and Chemicals to water bodies - causing eutrophication

- ③ Increase in monoculture
~~④ A~~

II Natural Resources

Positive

→ Can increase
Soil moisture

→ Reduce
weeds, pests
etc.

Eg. Drip
irrigation.

Negatives

① Deplete ground water
— 78% ground water used
for irrigation

② Contamination of
groundwater

Eg. Uranium Contamination
in UP and Bengal.

③ Monoculture - Affecting
diversity

④ Export of water Eg India
virtually exported 1 billion
tonnes in 2021.

Measures to ensure Sustainability
and equity

I Sustainability

① Watershed development.

Eg = PM Kishu Sinchayee Yojana
- 'per drop more drop' Har Khet
Ko pani.

② ~~Ego~~ Rationalise power subsidies

Eq II Equity

① Use of renewable energy for
Irrigation

Eg = PM KUSUM

② Growth of ~~po~~ technologies like
drip Irrigation, sprinkler irrigation etc..

③ Extension of Rain water harvesting.

④ River Linkage projects

↳ To connect water surplus
and deficit States.

Irrigation is one major
input for farming and its development
is synonymous with growth of
agriculture.

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

Homi J. Bhabha and Vikram Sarabhai pioneered atomic energy and space technology and they collaborated with each other for establishment of Thumba Centre of ISRO for Rocket launching.

Contributions of Homi J. Bhabha

- ① Discovered that ~~A~~ Einstein's relativity theory can be proved through wave scattering - Bhabha ~~Satt~~ Scattering
- ② India's 3 Step model of nuclear power generation
- ③ Institution builder - Instrumental in establishment of CSIR Labs all over India.

Contributions of Vikram Sarabhai

- ① Significantly contributed to development of first Space Launch Vehicle SLV-3.
- ② Chairman of ISRO for first mission - Rohini
- ③ Mentored stalwarts like A.P.J. Abdul Kalam.

India benefitted from their Contributions in many ways

- ① Growth of Nuclear power generation capabilities
 - ↳ based on three step model
 - ↳ Rooted in the idea of Self reliance.
- ② SLV-3 further developed into PSLV which became the ~~the~~ most credible work force of

ISRO Launching mission as wide as Mangalyaan (PSLV-C25)

- ③ Created a new generation of Scientists like A.P.J. Abdul Kalam, K. Sivan etc..
- ④ Motivated a new generation of Indians to pursue Science as a career for the future
- ⑤ Ensured that a newly develop decolonised India won't lag in its Scientific aspirations.

Homi Bhaba and Vikram Sarabhai founded centres like BARC and Indian Physics lab, Ahmedabad etc.. which pioneered many developments in Science.

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

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

Generative AI develops.

Contents after mimicking the human brains and produce the results similar to the ones generated by humans.

Eg. Chat GPT, BARD of Google.

Potentials of Generative AI

- I Creative Industry
 - ↳ Originate arts, literature etc.. stimulating its growth.
 - ↳ Aid humans in creating original and high quality creative outputs.

II Education

- ↳ Personalised education for children based on their levels.
- ↳ Increase the accessibility of knowledge.

↳ Reduce inequalities

III Economy

↳ ~~Increase the precision of surgeries.~~

↳ Bigdata analysis for economies
and authentic and accurate
conclusions from empirical data

↳ Predict consumer demands.

↳ Customised Ad Campaigns.

↳ Better Supply Chain resilience.

IV Health and Agriculture

↳ AI based medical services.

↳ Increased access to information

↳ Predict of crop growth, level
of fertilization, market demands etc..

↳ Precision of surgeries

Challenges of its Societal impacts

① Unemployment

↳ Displace human beings.

- ② Monopolisation
↳ by few Corporates.
- ③ Data privacy and data Sovereignty issues
↳ Generative AI utilises user data and free flow of data
- ④ Creators bias
↳ affects racial and ethnic minorities
- ⑤ May lead to data Colonialism
↳ by Corporates.

Way forward

- ① State funding of R&D in AI.
- ② Increased regulation
- ③ ~~Better~~ Global treaties to maintain data sovereignty.

Generative AI is a giant leap and one step towards technology mimicking humans. It needs to be regulated to prevent misuse.

- Q.17 नवंबर 2022 में मिन्न 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 महत्व 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
Co chaired By Bangladesh and formed
in COP27 Egypt is a step towards
dealing with the challenged faced
by mangrove ecosystem due to climate
change. It involves, has following purposes

- ① Sustainable funding for Mangrove
based ~~to~~ geographies
- ② Increased technology transfer
- ③ Collaboration for Crossborder Mangrove
forests
- ④ Climate Change alleviation and
address sea level rise to prevent
its harmful impacts on Mangroves.

Importance of Mangroves

- ① Stabilise coastal ecosystems to for tidal effects
 - ↳ Due to its stilt roots.
 - ↳ Prevents pollution
- ② Provide habitat for wide flora and fauna
 - Eg. Royal Bengal tiger of Sunderban.
- ③ ~~Growth~~ Carbon sequestration and Salt water purification
 - ↳ due to pneumatophores.
- ④ Provide livelihood and food, for Coastal Communities.
- ⑤ Mangroves are evergreen wetlands identified under Ramsar Convention for Sustainable wetland Ecosystems.
- ⑥ Supports wide range of Aquafauna.

Challenges

- ① Aquaculture
↳ e.g. Mangroves of Vedaranyam
- ② Sea level rise
↳ Threatening Sundarbans.
- ③ Urbanisation
↳ Leading to encroachments into Mangroves
Eg- Gujarat
- ④ Water pollution
↳ Leading to Eutrophication

Some measures

- ① Mangroves under CRZ-I with utmost protection
- ② Afforestation and with Mangrove trees to prevent Coastal erosion.
- ③ Holistic Climate Change measures.
India should protect its mangrove ecosystem to maintain its Carbon sink under Paris deal.

- 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 introduced
Coalition for Disaster Resilient Infra-
structure (~~CDRI~~^{CDRI}) at Glasgow summit
of UNFCCC.

Features of CDRI

- Technology transfer for Disaster Resilience
- Focus on Small Island developing States
- Collaborative approach to research and development
- Collaborative funding for development of technology.

Issues with Disaster strategy in India

- ① Ad Hoc approach
 - ↳ Lack of proactive approach
 - ↳ Less focus on prevention
- ② Disaster reduction rather than risk reduction
 - ↳ Large financial resources

needed to retrofit buildings
Eg- 30% of Cost for earthquake
resistance.

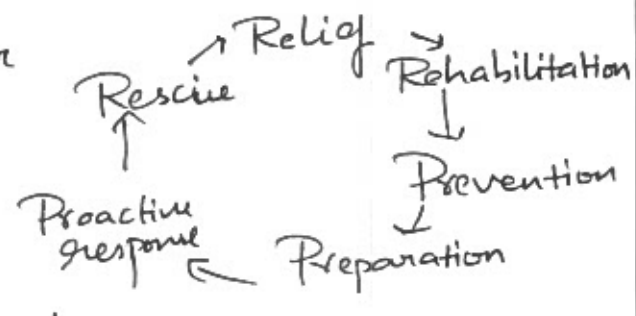
③ Bureaucratic than people centric
↳ Lack of Capacity building of
local populace.

④ States are ill-equipped
↳ Although being the first
responders, they are underfunded
and under represented at Central
measures.

New Strategy should include

- ① Capacity building of the local
agencies
↳ Who are first responders
- ② State specific disaster vulnerability
planning
- ③ R&D to develop technologies
for early warning.

④ Shift to Disaster Risk Reduction from disaster reduction as per Sendai framework.



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graph TD
    Preparation --> Proactive_response[Proactive response]
    Proactive_response --> Rescue
    Rescue --> Relief
    Relief --> Rehabilitation
    Rehabilitation --> Prevention
    Prevention --> Preparation
    
```

Need for new approach

① India's vulnerability to disasters.
 ↳ Eg:- 40mn susceptible to flood.
 ↳ 80% land - Eg a earthquake prone.

② Increase in disasters due to Climate Change.

③ DM Act, 2006 should be updated with current threats

Eg:- Epidemics like Corona.

④ For better Centre State Coordination.

India should adopt models already successful models like Odisha model which drastically reduced Cyclone deaths while making plans.

- 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

As per Symantec, India is one of the ~~ten~~ top ten countries facing Cyber attacks.

Eg:- Ransomware attacks on public Computers

Hacking of Zomato data in 2021 accessing user information

Attack of ~~the~~ Mumbai power department by Chinese hackers.

Key factors contributing to Cyber attacks

① Asymmetric warfare

↳ State support for Cyber attacks

Eg:- Stuxnet attacking Iran nuclear project

② Security vulnerability of Critical assets

③ Lack of data protection law.

↳ Difficult to punish attackers

④ Anonymity of attackers

↳ Promoting impunity

⑤ Lack of vigilance

↳ India doesn't have a
Cyber wing at the Central forces like
Israel

Impact on various sectors

I. Social

① Data Loss

↳ Loss of sensitive personal
data

Eg. Hack of SBI ATM cards.

② Skepticism with technology adoption.

II. Political and Strategic

① Security of Strategic assets.

② Vulnerability of sectors will
increase

③ Cyberspace as 5th Avenue of
Warfare.

~~④ Data~~

III Economics

↳ 'Data as oil'

↳ Affects credibility of Indian Corporates

↳ Growth of parallel economy.

Some measures

① Some government measures:

① Indian Critical Information Infrastructure protection Centre
- for critical infrastructure

② Cyber Swachhta Kendra
- for botnet cleaning

③ Cyber wing of Indian Army.

② Develop Comprehensive data protection Law

③ Bilateral treaties to promote data transfer

We should develop

Indigenous capacity to create technicians in the field to reduce our vulnerability

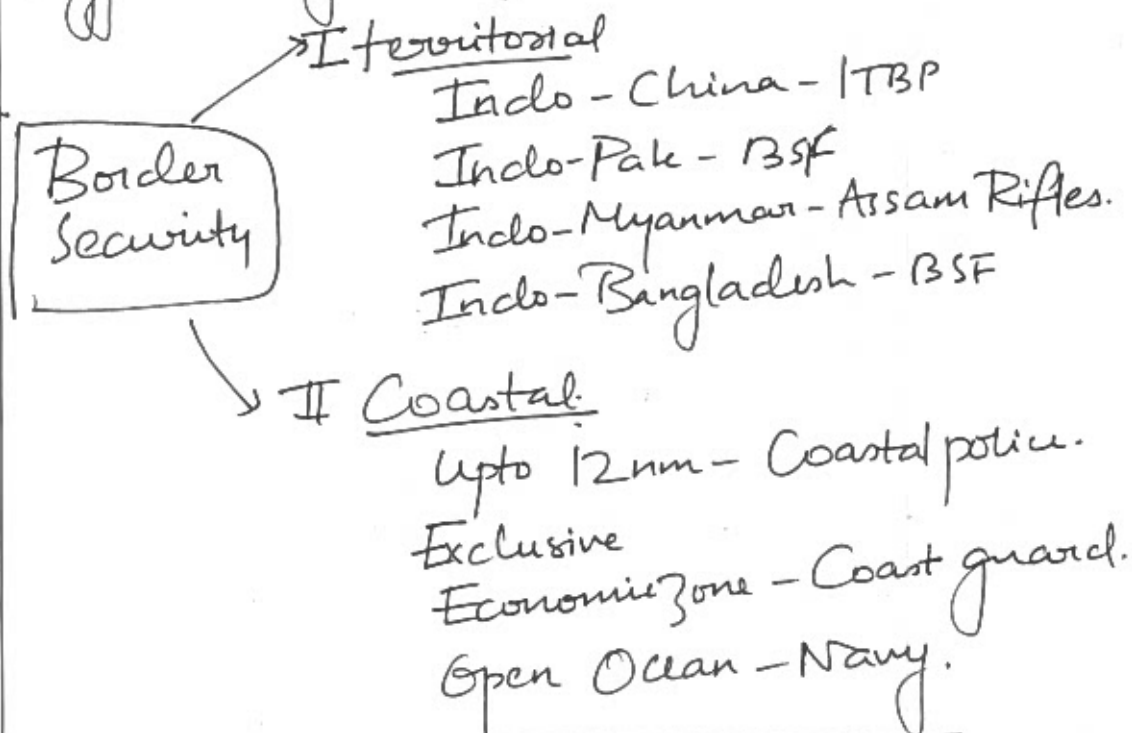
Q.20 सीमा सुरक्षा के संदर्भ में, तटीय और स्थलीय सीमाओं के प्रभावी और कुशल प्रबंधन को सुनिश्चित करने के लिए विभिन्न सुरक्षा एजेंसियों के बीच सहयोग और समन्वय को कैसे बेहतर बनाया जा सकता है?

(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 7500 km
Coastal borders under the dual
Control of Central and State governments
and 15000 km of territorial borders under
different agencies of Centre.



Issues with border management

① Lack of parity
↳ BSF, ~~and~~ ITBP, Assam rifles are
paramilitary and are not having

privileges at par with Army.

② Coordination

↳ Coastal police is under State while Coast guard under Centre

↳ Affecting Coordination.

③ Internal rivalry affecting Cooperation

Eg:- Fight between Assam rifles and Manipur police in 2023

④ Lack of intelligence and data sharing

↳ As Crime and Criminal tracking Network System (CCTNS) is still not operational.

Cooperation and Coordination can ensure effective management as

① Better information sharing

↳ Central force needs localised information to be effective.

- ② Augment ~~information~~ gaps in performance.
- ③ Prevent multiple commands
↳ leading to inefficiency
- ④ Better coordinated responses.
- ⑤ Increased morale between forces.

Some measures

- ① Theatrisation of Army of In 2022
- ② Establishment of department of Military Affairs in 2022
- ③ We should give parity between Army and other forces.
- ④ Cross sectoral deployment to develop Collaboration.

India has a world's
Second largest defence force and the
Collaboration is necessary for better
results.

Space for Rough Work

Candidates must not
write on this margin