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(To be filled by candidate)

Name of Candidate : SHOIAB**Roll No.** : PTTPa21500**Registration Number** : P **Date of Examination** :**Exam Centre** : Old Rajinder Nagar ☒ Bhopal ☐ Online ☐**Test - 3****Code : TC073**

MTS IGP Batch 2023

GENERAL INSTRUCTIONS

This Question-cum Answer (QCA) Booklet contains 56 pages. Immediately on receipt of the booklet, please check that this QCA booklet does not have any misprint or torn or missing pages or items, etc. If so, get it replaced by a fresh QCA booklet.

Candidates must read the instructions on this page and the following pages carefully before attempting the paper.

Candidates should attempt the questions strictly in accordance with the instructions specified in the question paper and in the space prescribed under each question in the booklet. Any answer written outside the space allotted may not be given credit.

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

SUBJECT/PAPER
GENERAL STUDIES**Invigilator's Sign.** :



(For filling by Examiners only)

Evaluator Code :

Q.No	Pg No.	Maximum Marks	Marks	Total
1	1			
2	3			
3	5			
4	7			
5	9			
6	11			
7	13			
8	15			
9	17			
10	19			
11	21			
12	24			
13	27			
14	30			
15	33			
16	36			
17	39			
18	42			
19	45			
20	48			
Grand Total				

Signature

MACRO COMMENTS

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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 Tax - Tax which is applied to income in the excessive income generated from a unintentional market income.

↳ a favour → profit more than expected
↳ unregulated or not
due to company's action.

↳ eg. Govt. recently applied windfall Tax on oil companies during cheap oil prices from Russia.

Windfall Tax to Redistribute wealth

↳ ① Helps to collect extra income from the company.

② The profit is not due to any action or policy of the committee.

- ③ take the extra-income from company due to unforeseen events.

Promoting Greater Economic Equality

- ① Used for funding welfare schemes

↳ e.g. - PM Gram Sadak Yojana.
e.g. - Subsidy on LPG.

- ② can be used to promote intra-generational equity e.g. - funding shift to green energy.

- ③ use to redress profits of large companies
↳ e.g. such events can lead to large profits of companies like oil refining P&Ls.

- ④ Promote welfare through unforeseen events & Revive Economy

⇒ Such welfare taxes fulfill the promise of Inclusive, Sustainable goal (5) growth of the future.

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 - constituted by the government to set the inflation targeting. [e.g. current target $4 \pm 2\%$].
 ↳ 3 members from RBI + 3 from government.

Successes of MPC

- ① Has kept steady rate of Inflation for most part.
 ↳ Target 6%, maximum inflation was within reach (6-7%) even during COVID-19.
- ② Inflation Targeting free from political fears
 ↳ set by experts according to market fears.
- ③ MPC measures like increase of 250 basic points helped to tackle the capital outflow

- (4) It keeps the interest rate stable, controlling Inflation. e.g. during Global monetary Tightening

Challenges to MPCs

- (1) Not able to keep Inflation within Target
 ↳ e.g. breached 6.1. max limit.
- (2) Synchronizing food Inflation
 ↳ Doesn't target food Inflation separately.
 ↳ affects the poor most.
- (3) MPC can't make target according to market forces.
 ↳ 4 ± 0.1 fixed by government.
- (4) Political Interference - No qualifications for 3 members nominated.

⇒ MPC inflation targeting played a vital role during COVID-19 recovery and Russia-Ukraine war, then again is global standdown and monetary Tightening

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

currently India produces > 50 mn ton
of millets [सूखे क्षेत्र]. Millet is
considered as cereal grain which
has various nutritional and climatic
benefits.

Millets for Sustainable Agriculture

- ① Good for water scarce area & drought area
[e.g. - same water compared to
wheat & rice -]
- ② Use less fertilizers and pesticides
- ③ Millets don't require much water-
input [most effective crop].
- ④ Millet has higher productivity per unit
area & fulfilling Government's Target
- ⑤ Diversity Production

Millet for Nutritional Security

① Good for Nutritional Requirement

Zero Gluten
i.e. Gluten free

Healthy &
easy to digest

Protein &
fibrous.

② Good for people suffering from Diseases
like heart attack, kidney issues.

③ Good for ~~both~~ Balanced & Nutritional Diet
→ e.g. Sustainable living & Diversify
in consumption.

④ can be used to ensure world food demand [In Russia-Ukraine crisis].

→ food exports → Income of farmers → Then Nutritional security further!

— "Shree Anna" needs to be popularized,
processed and marketed to ensure goal
of International year of Millets (2023).

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 aims to deliver
tap water connectivity to every
household by 2024. [i.e. 55 lt per
each person]
↓
ensuring water universality

significance & potential to end regional
disparity

- ↳ ① Aims to provide 80% more connections,
11% more already achieved.
- ↳ ② It focuses on areas with water
scarcity e.g. Rajasthan and Gujarat
- ↳ ③ More funding to dearh some areas
- ↳ ④ some areas have very less water
connection
e.g. - Baerun → earlier < 30%
Now > 50% connections.

underlying Issue with Jal Jeevan Mission

- ① most Important is Regional Disparity
 - lack of Centre-State coordination
e.g. Rajasthan fund not utilized.
 - some areas not really focused.
e.g. - Bilaspur & Munari in MP.
 - ② water availability - connections are there but supply of water not reached.
e.g. - Nagaur District.
 - ③ Alleged ambitious target
→ 80 more connections within 2 years.
 - ④ Doesn't include holistic water Management
 - should have included
 - Rainwater water
 - Groundwater recharge (Bharat Ganga)
 - water conservation.
- water is essential part of life and achieving SDG 6, therefore economically it ~~water~~ can be considered

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 — They are large systems which can be used to charge batteries of electric vehicles. [Budget say 30000 per kWh] features → store large amount of energy. multiple charging at an intensity

Applications of BESS

- ① Primarily used for electric vehicles
↳ achieve targets of FAME-2 to develop charging infrastructure
- ② Can be used to store high amount of Renewable energy.
- ③ will make grid connectivity possible for continuous supply of renewable energy.

How it can Revolutionize Energy program

- ① It can help achieve NDC target of 50%
 ↳ currently > 41% Renewable energy.
- ② Revolutionize electric vehicle sale
 ↳ target of 30% share in automobiles by 2030.
- ③ can ensure storage of high amount of
 ↳ energy
 ↳ sustainable supply of Renewable energy.
- ④ Reduce Impact of Ready - impacts of
 ↳ Batteries
 ↳ Fiscal deficit with volume.
- ⑤ It can revolutionize the energy
 ↳ trade markets

⇒ BIS program is not only aligns
with "Sustainable" but also with
a decarbonized future by 2047.

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 - It is the Indian space mission targeting to send humans to space station in lower earth orbit.

→ This will happen in 3 phases.

Developments of Gaganyaan

- Vyomites used in first two phases.
- Reentering in earth atmosphere has been tested.
- mk-III fully developed that will carry the passengers.
- Training of selected individuals in Russia.

Challenges in Gaganyaan Mission

- ① Reentering into earth atmosphere
 - may cause fire like recent SPACE-X incident.
 - very high temperature → our cabin should be safe.

- (2) mark-3 is less reliable, it has been
 tested only few times.
 ↳ while PSLV more tested.
- (3) Only two testing before final launch of
 mission.

Possible Benefits for the Society

- (1) possible future space exploration.
 - (2) will interest students to take
~~interest~~ keen interest in space research.
 ↳ e.g. callieo Kalpana chawla.
 - (3) will be helpful in finding origin
of moon and earth.
 - (4) will benefit from future resources
discovery from outer space.
 - (5) benefit of National people.
- ⇒ Space exploration is very important
 and India is keen on developing as
 a key player in it [Ministry of S&T].

Q.7

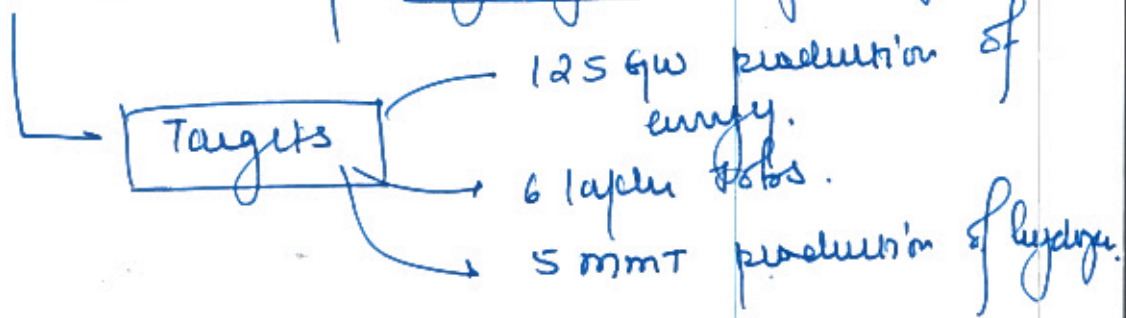
"जलवायु परिवर्तन और प्रदूषण से निपटने की हमारी खोज में हरित हाइड्रोजन एक सरल और जादुई समाधान हो सकता है"। भारत के राष्ट्रीय हरित हाइड्रोजन मिशन के आलोक में कथन का आलोचनात्मक विश्लेषण कीजिए।

(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 has been launched with an outlay 197004 in this year's budget. The key focus is to develop hydrogen as fuel for future.

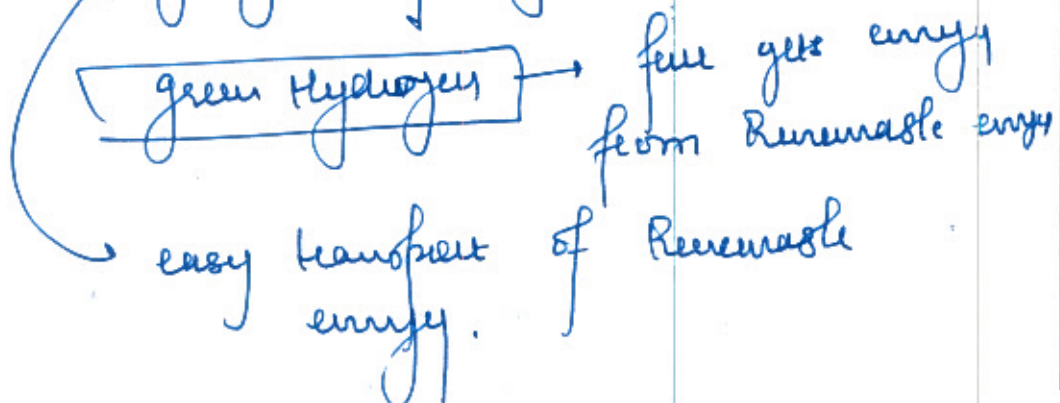


Importance in Tackling climate change

① Hydrogen is clean fuel

↳ doesn't release any pollutants

② Hydrogen is a fuel carrier



- ③ It aims to reduce summt of CO₂ emissions as part of its objectives.
- ④ It focuses on Research & Development & Pilot projects which ~~will~~ reduce pollution.
- ⑤ It aims to reduce the impact of forest fuel worth 7.2 lakh.

But there are certain apprehensions

- ① Production of electrolyzers very nascent stage.
- ② Use large amount of water
 (e.g. - 1 tonne = 900 lt of water).
- ③ Production is very costly now.
 { current price - Rs 600-800 (1 tonne)
 { needed - Rs 1500-2000 (1 tonne).

⇒ Hydrogen will be key to India's achievement of "NDC targets" and "Panchamrit"

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

Recently a event of land subsidence took place in Joshimath, Uttarakhand. It brought to light key factors related to sustainable environment conservation (SDG-11). & Disaster management.

Lessons for Disaster Management

- ① Lack of preparedness even when it was in zone-V in terms of vulnerability.
- ② Even after maps appeared there was no evacuation.
- ③ Community participation was largely missing and fire-jerk action was there for rehabilitation.
- ④ Land-subsidence can be considered as separate disaster under NDMA act.

Lessons for Environment Conservation

- ① Planning should be based on Environment Impact Assessment (EIA).
- ② Expert committee should be taken into account for development.
 ↳ e.g. Melita Committee recommendations ignored.
- ③ Limited capacity of vulnerable areas.
 ↳ should promote "sustainable tourism"
- ④ This is an example of unregulated ~~area~~ development of residential housing.
- ⑤ NOMA Plan 2016 - official & Non-official means should be applied to protect such disasters.

⇒ Though disasters are natural, the trigger points are anthropogenic in Nature.

Q.9

"पंजाब में हालिया कट्टरपंथी रुझानों से पता चलता है कि खालिस्तान का मुद्दा अभी भी उबल रहा है।" हालिया घटनाक्रम के संबंध में कथन पर चर्चा कीजिए और इससे निपटने के उपाय सुझाएँ।

(150 शब्दों में उत्तर दीजिए) 10 अंक

"The recent radical trends in Punjab show that the Khalistan issue is still simmering." Discuss the statement with respect to recent developments and suggest measures to handle it.

(Answer in 150 words) 10 Marks

Khalistan Movement - It is the separatist movement which started since independence for separate Punjab state.

↳ It got momentum ^{before} ~~after~~ operation Blue Star in 1980s.

Recent Trends

① → New open demand of Khalistan with New leadership.

↳ e.g. ~~Dr~~ Longpreet Singh Toftan and Anurpal Singh.

② Support from outside

↳ (i) Protests by Khalistani outfits in Canada and European countries. e.g. Protest outside UK embassy.

③ Drugs trade & Internet from across the Border.

↳ e.g. - Intelligence experts suggest role of Pakistan in such tendencies.

Measures to Handle Such Tendencies

① Counter through Security measures

↳ Using same like WADA, NSA against fringe elements.

② Counter through Intelligence

↳ e.g. arrest any support from across the Border.

③ Foreign Diplomacy

↳ counter any protests through negotiation. (e.g. India warned against Anti-India protests)

④ Counter through diaspora and development of Punjab.

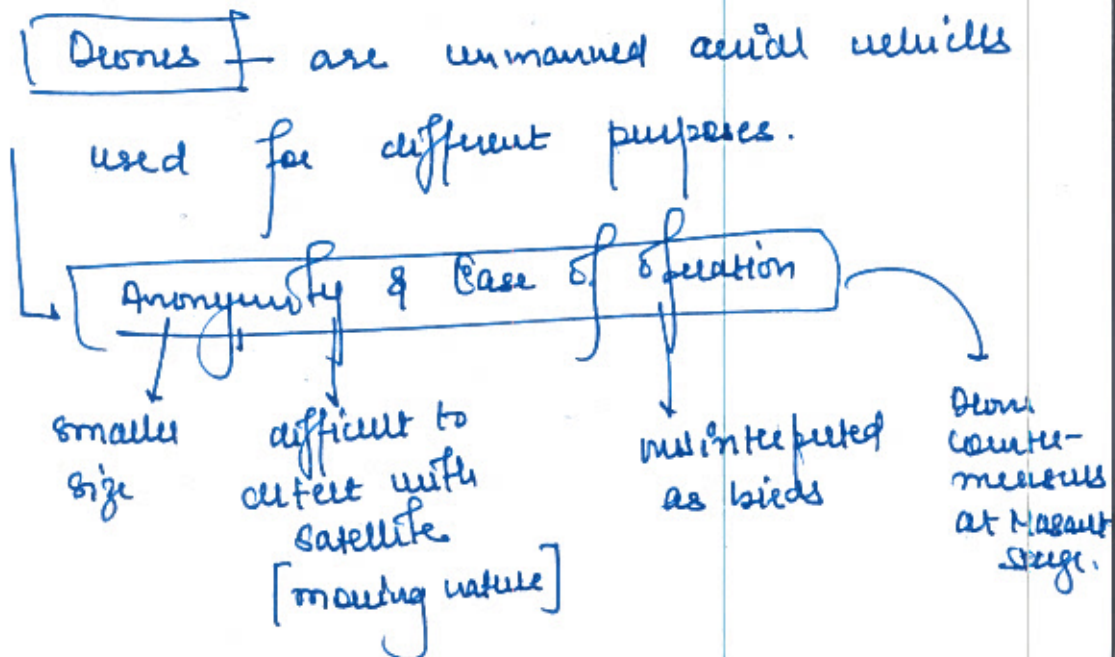
⇒ Sovereignty of India is paramount to security; Internal or external.

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



Challenges to Border Security

- Border Infiltrating
e.g. drugs captured at Punjab Border
- Arms trade Illegally
e.g. - Rajasthan Police captured at Barmer.
- Tense attacks → Drones can be used to plan state sponsored & Non-state tense attacks.

- ④ Threat to security
 ↳ extra edge to military Intelligence.

Suggestions to tackle the drone problem

- ① Drone Regulations
 ↳ Rules released by Ministry of civil aviation [Red, Yellow & green zone classification].
- ② No Fly policy without registration
 ↳ Drones should be registered along with pilots.
- ③ Anti-Drone capabilities should be explored
 ↳ $\begin{cases} \rightarrow \text{laser} \\ \leftarrow \text{Net} \\ \rightarrow \text{missiles} \end{cases}$
- ④ Develop own Drone capabilities for counter-measures.

⇒ Drones are part of the modern hybrid warfare, thus India need to develop share of the art drone capabilities.

- 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

India produces >411 GW of total energy out of which >168 GW is from renewable source [MNRE march 2023].

→ Electricity Amendment Bill was brought for various advantages -

For Consumers

① Freedom to choose electricity supplier
↳ e.g. from DISCOMs choose any supplier.

② It will reduce cost by giving more options for the consumer.

③ It will give user to make

Environment friendly choices.

④ Consumers also become green supplier

For DISCOMs

- It reduce the compliance burden by giving options for RPO. [Renewable purchase obligation]
- Reduce corruption — proper metered connection
 - ↓
 - timely assessment of supply & payment.
 - ↓
 - reduce theft of electricity
- Reduce them of their high debts.

For Environment — Increase supply of Renewable energy.

- ↓
- Reduce pollution from coal plants.
- ↓
- Increase supply & grid connectivity from consumers.

But there are some shortcomings

- Didn't address the financial debt situation of DISCOMs. [Debt were in DISCOMs].

- allegations of violation of federal structure | strenuity in federal ist of govt.
- strenuity suppliers will have ultimate say in prices
 - ↳ for high prices for consumers [as it is market driven]
- also various subsidies will sustain
 - ↳ like farm subsidies.

Measures to Overcome

- ↳ proper consultation with states [Federal structure].
- ↳ consult various discoms.
- ↳ find solutions for sustainability of discoms e.g. UDAY bonds.
- ↳ transparency in supply of electricity in new system

⇒ Power sector reforms are long due to increase the productivity, efficiency and sustainability of energy distribution.

- 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 functions as the principle market regulator in Indian Investment capital market.

Recent Hindenburg report led crises in stock exchange led to the questioning of its important role.

Role of SEBI as Market Regulator

→ Set Standards for Investors, Brokers, Issuers in market.

→ It sets up funds for surveillance and Information of Investors.

→ e.g. Investor Information Fund.
→ Awareness Campaigns.

- It regulates the functioning of market platforms & stock exchanges
 - ↳ e.g. guidelines for stock exchanges like BSE, ISE.
- It regulates the Manipulations and Price setting irregularities
 - ↳ e.g. Rules for setting orders of stocks in market.
- In any case of fraud with trustees of stock two as principle trusty.
- # Challenges faced by SEBI
 - Manipulations like insider trading, etc.
 - using AI and other technology for stock manipulation.
 - Frauds in Market Manipulation
 - ↳ e.g. Harshad Mehta case
 - ↳ now shutdown of prize falls beyond short.

→ short selling & other trading features
 ↳ e.g. - Adani-Hindenburg cases

Reforms for SEBI

→ SEBI can regularly audit the regulation of listed companies.
 ↳ e.g. 3rd Party audit reports.

→ Review of previous ~~records~~ corporate frauds & delisting from financial market.

→ SEBI can be give power to see annual reports & investigate them

→ Consumer related → Trustee guide for trading in listed companies
 ↳ suggest education not based on profile of investors for investors.

⇒ Capital market has a lot of potential for saving money to finance corporate growth and development of economy.
SEBI needs to play role of watchdog

- 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 produces 315mn tonnes of grains and 330mn tonnes of horticulture crops.

But despite high production there are several issues [Advisory Committee by NITI Aayog]

- ① Low productivity - low productivity
low within country & outside country
→ low Rice productivity China double of India's average.
→ Punjab double of West Bengal's avg.

- ② Lack of diversification of crops
→ wheat & Rice production.

- ③ Lack of Mechanization
→ India → 45% USA → 95%.

- ④ Lack of storage & Post harvest issues

- └ (i) lack of godowns
- └ (ii) lack of extension services
- └ (iii) lack of marketing [Farmer's & Backward Linkage]

⑤ lack of sustainable farming
└ like organic, ZBNP, etc.

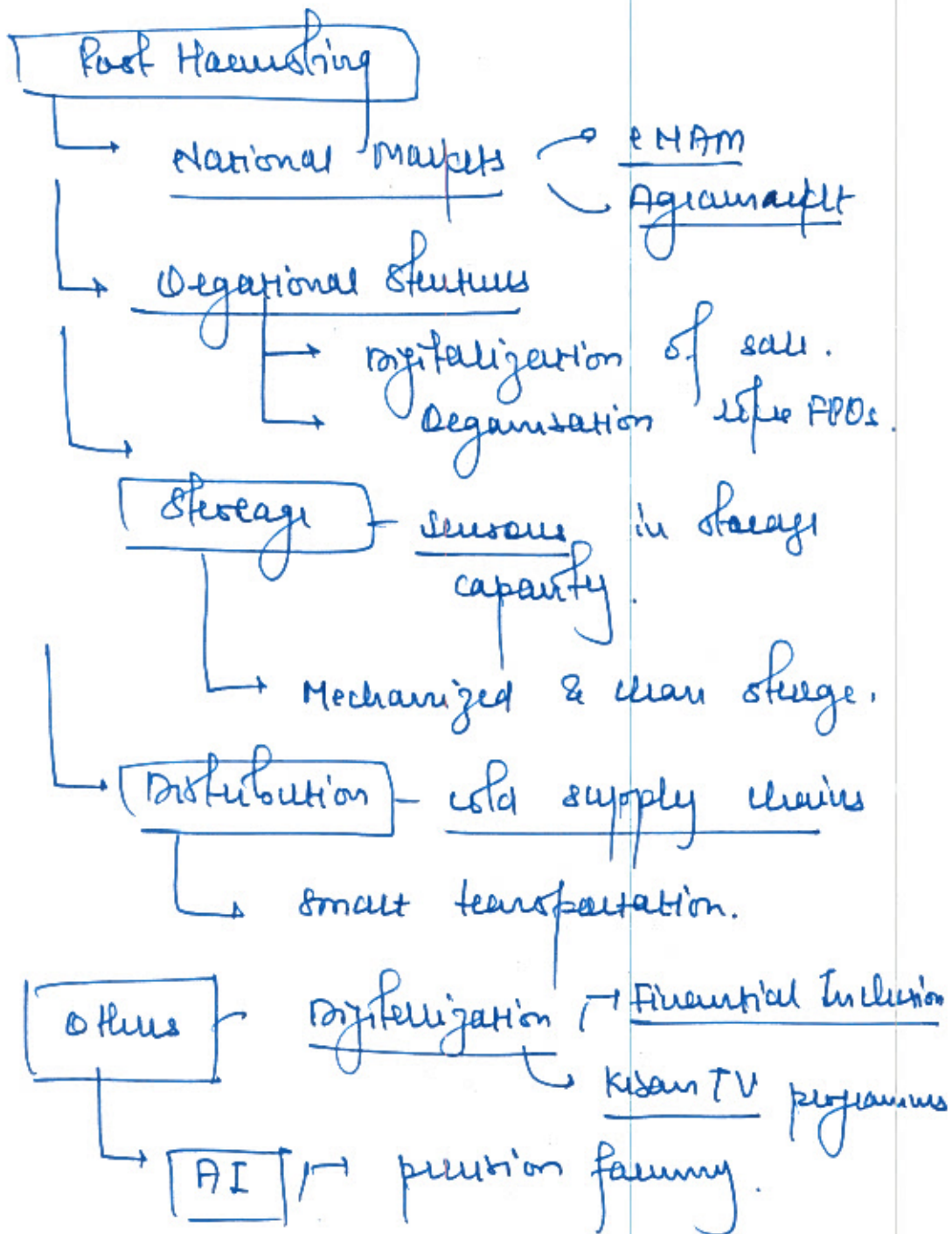
⑥ lack of income of farmers
└ ┌ middlemen issues
└ ┌ utilization of APMCs.
└ └ lack farmer control.

Role of Technology to solve

- Pre-Harvesting Issues

- └ Credit facilities - kisan credit card
- └ Information - kisan call centre
└ soil health card.
- └ Inputs - direct benefit transfers.

- During Harvesting → Focus to survey
└ ┌ nature of crops.
└ ┌ AI based models to predict
└ └ crops & weather.
└ └ Mechanization to help increase
└ └ productivity.



⇒ Technology is key to development to Agriculture. And as S. Swaminathan has said, "without agriculture, no other sectors can grow". Agriculture uses Inclusive growth, food security & employment.

- 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

India has about 50% of cropped area under irrigation. Robust irrigation has resulted in ruled 315 mm ton production of grains [sunny & odd].

Impact of Irrigation on Environment

(1) It has created positive results

↳ (i) more production of crops, plants, trees, etc.

↳ (ii) less burden on Natural Resources like lakes etc.

(2) Negative Impacts

(i) Huge Impact on groundwater extraction
e.g. India → extract 25% of groundwater.

(ii) wastage of water in Irrigation
↳ flawed crop production [focus on Rice & wheat]

(iii) more agriculture - upland trees & forests.

Impact on Natural Resources

- Natural resources are destroyed for crop production.
- Natural resources like water depleted [large extraction].
- But large production crops is a positive.

Sustainability & Equity of Irrigation

- (i) Promotion and efficient use of irrigation
 - ↳ PM Kishu Sindhuayi Yojana focus on efficient farming.
- (ii) Using modern Technology and specialised system
 - ↳ sprinkler system - for horticulture
 - ↳ drip irrigation - deep rooted crops.
- (iii) Using Canals & Fortified linkages
 - ↳ Indira Gandhi Canal
 - ↳ National Inter-link linkage program.

- (iv) focus on surface water instead of
groundwater.
- (v) Focus on Tejashree Rainwater Harvesting
 ↳ ~~Rainwater~~ rooftop rainwater.
 ↳ Bhungroo system of Gujarat.
 ↳ Bamais of Rajasthan.
- (vi) Equal distribution among states
 ↳ resolve river water disputes
 (i.e. Tribunals).
- (vii) Use of Diversification & Enhance productivity
 [A. Dalwai Committee].
 recommended.
- (viii) Implement organic, NDMF and
waters [instead of Riu].
 ↳ esp. in areas like Punjab
- ⇒ Irrigation though under state subject,
 need small architecture with all
stakeholders to achieve SDG 7 & 8
sustainable agriculture in the future

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

Indian Scientists from Brahmagupta,
Aryabhata, to Homi Jehangir Bhabha and
Ambalal Sarabhai have contributed
greatly to advancement of science &
Technology.

Contributions of Homi-Jehangir Bhabha

→ He was the father of India's
atomic Nuclear Program. He devised
the 3 stage Nuclear Programme
for India.

→ He was the first to get government
work in space, which materialised
into formation of ISRO in 1969.

- He was also an institute builder for independent body. (BARC).
- He started the first phase of nuclear research in India.
- He was also involved in various development projects of Govt.

Contribution of Dr. Vikram Sarabhai

- He carry forward the work started by Homi Bhabha.
- He explored JRO's work in space development and satellite launch.
- He is regarded as father of India's space programme.
- He was pioneer to nation of PSLV launch vehicle.
- He trained the future scientists like Satish Dhawan under him.

- He commercialised the operation of ISRO.
- He also collaborated with Russian space agency for launch of India's first satellite.

⇒ Both Homi Bhabha and Vikram Sarabhai created the platform for space exploration and ISRO's record towards highest no. of satellite launches. with Chandrayaan 3.0 and Gaganyaan we are making new heights.

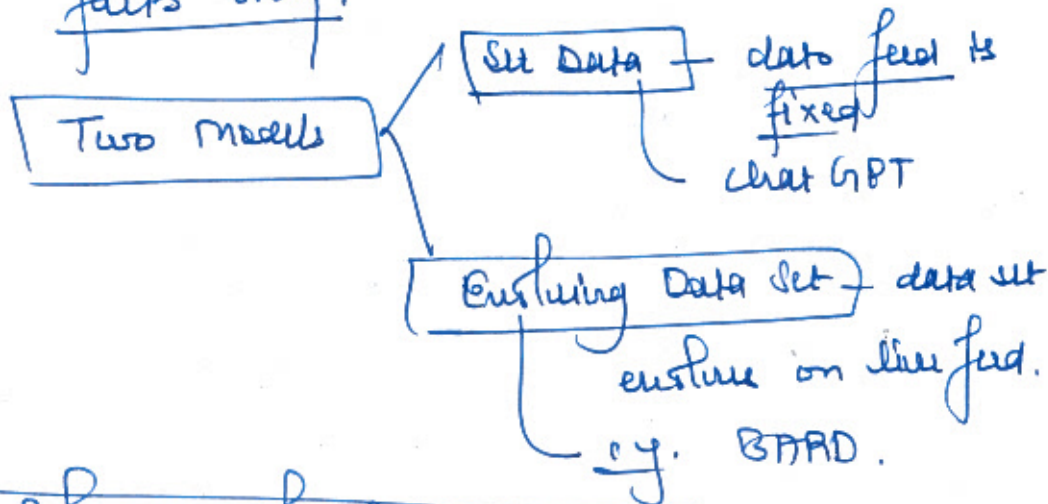
In Nuclear program also we have reached 1st stage & with soon with 3rd stage of 4th stage

Nuclear Program

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

Generative AI → The AI system based on neural networks, which feeds through data feeds and generate texts, audio, video based on such data feeds only.



Potential of Generative AI

- ① It has capabilities to generate Innovative Text, audios & videos.
e.g. give solutions to problems, questions, etc.

② Can Mimic Human like Intelligence.

③ In Different Sectors

(a) National Security → predict attacks
→ control cyber security.
→ control defense systems.

(b) Education — produce curriculum for students.
→ evaluate performance of subjective texts.
→ learning models.

(c) Services to Customers
→ provide better service delivery based on consumer choices.
→ produce customized routes for service delivery.

(d) It can also help in
→ healthcare diagnosis & drug development
→ help in New Data models for growth & development
→ Environment solutions.

Challenges posed by Generative AI

- ① Biasness of Intelligence
 Intelligence derived through data,
 data can be wrong.
 e.g. - google shutdown of AI chatbot.
- ② Human Interference - control of generative
 AI like ChatGPT & BAAD should be
made open.
- ③ Machinic Apocalypse - some thinkers
 like Elon Musk and BHI gates have warned
 against potential threat to humanity.
- ④ Loss of creativity in humans when
 work can be created on ChatGPT.
 e.g. artists, poets, etc.
- ⑤ Can be used as security weapon by some
 actors.

⇒ For the "Age of AI" one has to take lead
 to achieve one of sapientia of
 "i.e. achieving the Potential"

- 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

Mangroves are type of wetlands which has features of both terrestrial and oceanic ecosystem.

↳ e.g. - Sundubans, Sonneratia are types of mangroves.

In COP27, India became party to "Mangrove Alliance for Climate".

Purpose

- ① Achieve sustainability of Mangroves by 2030 i.e. set targets for 2030.
- ② See mangroves from ecological and habitable perspective also
 - ↳ i.e. focus for sustainable livelihoods along with local habitants.

- ③ It also focuses on the economical aspect of mangroves
 ↳ e.g. Rich source of ~~resources~~ resources like fishes, etc.
- ④ voluntary targets can be set by Individual countries.
 ↳ e.g. Bonn Targets on forests.

Importance of Mangroves in Coastal Biology

- ① Acts as Barrier
 ↳ from floods, cyclones, Tsunami.
 ↳ e.g. Fani's impact more due to destruction of mangroves.
- ② Acts as filter for water
 ↳ since streams carry various pollutants it filters them out maintaining ecological quality.
- ③ Maintain Biodiversity, as an Ecotone
 it has many biodiversity unique

6 &.

④ livelihood to locals

mangroves offers agriculture &
fishing opportunities

{ Agriculture - Rice cultivation in
Kerala (Kuttanad).
Fishing - Sundarbans.

⑤ As tropical nations has high humidity
more mangroves are present in it

India, > 2% area under mangroves
[5% area under wetlands].

⇒ aligned with global targets India
 has launched MISHI programme
 for development of habitat as well
 as people. Mangroves are important
SDG 14 (life under water) for better
sustainable growth.

- Q.18 आपदा प्रतिरोधी बुनियादी ढाँचे के लिए गठबंधन का गठन भारत में आपदा प्रबंधन दृष्टिकोण को और अधिक मजबूती प्रदान करता है। टिप्पणी कीजिए। भारत में आपदाओं से निपटने के लिए एक नई रणनीति की आवश्यकता के औचित्य सिद्ध कीजिए। (250 शब्दों में उत्तर दीजिए) 15 अंक

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

Coalition for Disaster Resilient Infrastructure (CDRI)
is a disaster related International
Initiative by India. It was launched
in 2019 by hon. PM.

How it Brings more Robustness

- ① Global Cooperation in Disaster Management
↳ This fulfilling an important
objective of Sustainable Development.
- ② It focuses on Resilient Infrastructure
thereby promoting both Adaptation
and Migration from climate change
- ③ Gives India leadership role to
represent the problems of Developing
countries in climate action.

- ④ It will share best practices of modern Resilient Infrastructure with the world.
- ⑤ It is first of its kind platform which gives advice on sustainability of Infrastructure.
- ⑥ Its second such Initiative from India after IIA.

Need for New Strategy to tackle disasters

- ① As global climate change is showing effects.
 - extreme weather events
 - concentrated rainfall & droughts

new Issues

Therefore new ways to tackle such challenges.

- ② Global Issues due to climate
 - migration (New York Declaration)
 - water-matters (Kashmiri Dispute)

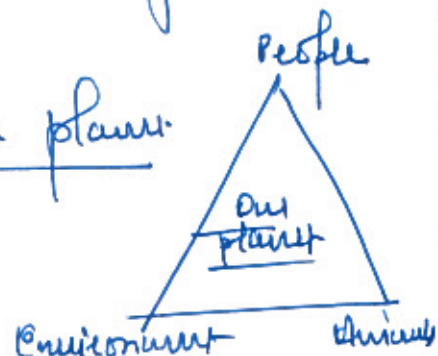
→ Timeframe need for International cooperation like ISD & CBAT.

(3) New disasters like events of heats waves, urban heat island effect is on the rise.

(4) Frequency of disasters has increased
→ floods each year after 2014.
 → Kerala floods,
 → North India flood (event)
 → Bangalore floods.

(5) Need to focus in mitigation and adaptation
 Nation disaster adaptation
 mitigation fund fund

(6) Need more Holistic 'One planet approach'



⇒ Disasters though uncontrollable but the management and recovery depends not only post management but also Resilience of existing Infrastructure.

- 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

Ransomware → It is a form of cyber attack that attacks the cyberspace in demand of a Ransom.

↳ e.g. - Ransomware for 7 continuous days in ASIMS.

Recent Rise → There were more than 13000 ransomware attacks in the last one year.

↳ e.g. ① Attack on munsevi which Power Infrastructure during escalation with china.

② Attack by Petya Ransomware.

- ③ attacks on Tomato, threatening to
steal data of millions of customers.
- ④ attack on Ransomware on
Kendrakumar Nuclear Plant.
- ⇒ all these events show attack on
critical Infrastructure and Corporations.

Factors Contributing to this Threat

- digitalization of economy.
 ↳ e.g. 2nd largest Internet user
 base.
- cyber security capabilities at nascent
 stage.
 ↳ No single ~~authority~~ ^{agency} for cybersecurity.
- cyberspace becoming a tool of
 security threat
 ↳ e.g. - Mumbai power plant attack
 at time of border tension with
 China.
- lack of awareness of cybersecurity
 ↳ need of better training.

Impact of these attacks

① Threat to Personal Data Security
 ↳ need data protection law.

② Threat to Critical Infrastructure
 ↳ NCIIPC needs to more active.

③ Threat to Commercial Interests

```

    graph TD
      A[Threat to Commercial Interests] --> B[Data Localization]
      A --> C[Protection of misuse of Data]
      A --> D[Data Mining]
    
```

④ National Security Threat
 ↳ such attacks can harm internal & External security.

⑤ misuse of people
 ↳ e.g. ATRMS attack leaked
 security

⇒ Cyber space has become part of our world. So there is need for domestic & international authorities & protection.

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 maritime border of 7517 km and land border of 15000 km, hence the challenges are multifaceted.

Issues related to multiple agencies

Terrestrial Borders → different force for different borders.
 → multiple force for same border.
 → e.g. - Army & BSF (LAPF).
 → lack of proper demarcation of roles.

Coastal Borders → overlapping jurisdictions
 → ~~3~~ separate force for different areas
State Police (Territorial water) Coast Guard (CGF) Navy (Open sea).

Cooperation & Coordination of forces

Terrestrial Borders

- One force, One Border Rule
 - ↳ e.g. BSF - only for India-Pakistan border.
- specific roles to CAPF and Army.
- Interoperability between army, navy, air force.
 - ↳ through Integrated Battle command IDS, etc.
- Use of Technology to aid cooperation
 - ↳ e.g. - use CIMS, BOLD-QIT.
- Exchange of Information on a single platform.

Maritime Borders

- clear jurisdiction for different forces.

→ Maritime force should demandate etc
 ↳ e.g. Piracy should given to Navy.
 ↳ Illegal fishing to coast guards.

→ Better Information coordination between
 different force.

→ specific cooperation to check infiltration
 e.g. Mumbai attackers
 came through coastguard.

→ Recent Maritime contest center in
 Gungam is a step in this direction.

⇒ Government has taken various steps
 according to Shankar committee which
 push a uniform defence mechanism
of border area.

Space for Rough Work

Candidates must not
write on this margin