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Name of Candidate : RATHOR LAKHANSINGH

Roll No. : .....

Registration Number : ..... Date of Examination : 12/08/2023

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. : .....

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(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

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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

Recently, the government of India levied Windfall tax on Petroleum refineries and oil marketing companies.

"Windfall tax refers to tax levied on excess profit generated due to sudden changes in Macroeconomic parameters associated with product."

Example Heavy profit generated by OMC due to Russia-Ukraine war and sanctions.

→ Windfall tax thus acts as tax on excessive & undue profit.

Effectiveness of windfall tax → ~~Redistribute~~ Redistribute wealth & Promote greater economic equality

↓↓ Tax on excessive profit

↓↓ Boost government revenue

↓↓ ensures level playing field

↓↓ Revenue spent on social development; Capital expenditure

↓↓ enhances Human development; brings inclusive development ⇒ Redistribute wealth & economic equality

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However, there are criticism over application of windfall tax :

Issues / concerns with windfall tax

1) Goes against the principle of free market economy
2) seen as excessive government interference
3) Affects investment prospect in the sector
4) Retrospective application : affects stability and profits of the company
5) excessive profits due to reward for the risk ⇒ thus windfall tax affects risk taking behaviour
6) Promotes uncertainty

Way forward

→ Consultative approach before levy of windfall tax

→ Address ambiguity & uncertainty through framing of guidelines

→ use of windfall tax for social & capital development.

Thus Windfall tax as a tool should be leveraged effectively to balance economic equality with Ease of Doing Business

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Q.2 नई मौद्रिक नीति समिति (एमपीसी) व्यवस्था के अंतर्गत मुद्रास्फीति लक्ष्यीकरण को क्रियान्वित करने की कथित सफलताओं और चुनौतियों पर चर्चा कीजिए। (150 शब्दों में उत्तर दीजिए) 10 अंक

Discuss the perceived successes and challenges of implementing inflation targeting under the new Monetary Policy Committee (MPC) regime. (Answer in 150 words) 10 Marks

Monetary Policy committee is a statutory committee created on the recommendation from Urjit Patel committee under the RBI Act.

The aim of Monetary Policy committee to ensure that inflation remain in the range of 4 ± 2.

With recent fluctuation in inflation, there are debates around perceived successes & challenges of implementing inflation targeting

Perceived successes of implementing inflation targeting

→ 1. ensure macro economic stability : inflation in the range 4 ± 2 is good for economy

→ 2. Attracts investment : walking inflation reflects growth prospect (eg) FDI 85 Bn

→ 3. Creates employment opportunities : unemployment rate declined to 4%.

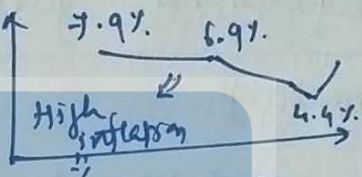
→ 4. Promote saving culture / financialisation of saving : (eg) Jan Dhan Yojana success depends on inflation targeting under MPC

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Challenges in implementing inflation targeting

1. Structural inflation : difficult to manage through MPC measure
2. shifting of accountability or blame game : if target not adhered



blame on MPC

3. affect investment cycle
   - clean balance sheet of corporates & Banks
   - But high interest rate due to inflation
   - affect investment cycle

Addressing challenges

1. synchronisation between fiscal policy & monetary policy
2. focus on structural reforms such as effective implementation of Labour laws, addressing infrastructure gaps through GATI SHAKTI etc

MPC has been fairly successful in implementing inflation targeting. However it must be complemented with other necessary structural & nonstructural measures to ensure optimum growth prospect of Indian economy

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Q.3 भारत में सतत् कृषि को बढ़ावा देने और खाद्य सुरक्षा में सुधार के लिए मोटे अनाज उत्पादन की क्षमता का आकलन कीजिए। (150 शब्दों में उत्तर दीजिए) 10 अंक

Assess the potential of millet production in promoting sustainable agriculture and improving food security in India. (Answer in 150 words) 10 Marks

Millets are nutricereals popularly refered as Sri Anna. With 2023 being celebrated as International year of Millet it has gained the limelight.

India being the largest producer of millets across world, it has potential in promoting sustainable agriculture & improving food security

Potential in promoting sustainable Agriculture

1. millets require less water : Address concern of water stress
2. millets are Climate smart : tolerate high temperature, sustained period of drought etc
3. Requires low or zero consumption of fertilizers, pesticides etc ⇒ ∴ reduce Nitrogen emission
4. Attract less diseases ; insects ; pest
5. ensures fertility of soil ⇒ prevent soil degradation ; erosion etc

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Potential in ensuring ~~sustainable~~ ~~agrical~~ food security

1. can bring dry land areas under cultivation
2. they are nutricereals: millets have high nutrient content such as Iron, Zinc, calcium etc
3. suitable to rainfed nature of Indian agriculture → Boost farmers income → improves food security
4. Address the issue of Hidden Hunger

Perception: as poor mans food

Challenges:
- Low level of support from Government
- Lack of awareness
- Less presence of food processing industry
- Branding & marketisation

Steps taken to utilise the potential

- Branding & marketisation: as "Sri Anna"
- MSP announced for Jowar; Bajra & Ragi
- National Millet Mission
- inclusion of millets under Mid Day Meal; ICDS

Need of the hour is to address various challenges around millets and promote them for achieving SDG goals of Poverty, Hunger, Health etc

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Q.4 जल जीवन मिशन में पेयजल की उपलब्धता और पेयजल तक पहुँच में क्षेत्रीय विषमता को समाप्त करने का सामर्थ्य है। मिशन के महत्त्व पर प्रकाश डालते हुए, वांछित उद्देश्यों की प्राप्ति में अंतर्निहित बाधाओं पर चर्चा कीजिए।

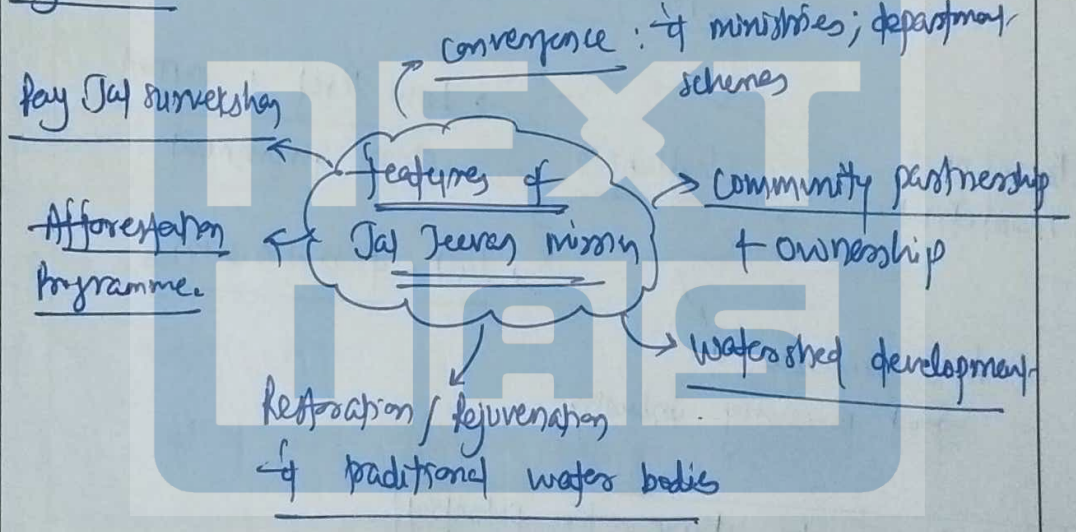
(150 शब्दों में उत्तर दीजिए) 10 अंक

Jal Jeevan Mission has the potential to end the regional disparity in the availability and accessibility of drinking water. Highlighting the significance of the mission, discuss the underlying impediments in achieving the desired objectives.

(Answer in 150 words) 10 Marks

Jal Jeevan Mission (JJM) was launched to fulfil India's commitment towards SDG-6 : Access to safe & potable drinking water.

Jal Jeevan Mission aims to provide access to drinking water for all rural households by 2024.



significance of the mission

1) improve health of citizens : safe & potable water address water borne disease vulnerability
2) women empowerment : functional tap water connection reduce their vulnerability in collection of water
3) enhances labour productivity
4) arrest ground water depletion : through conservation

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of rainwater " when it falls, where it falls "

5. Rejuvenation of water bodies : recharge ground water table;

6. Helps in drought management, flood management

Impediments in achieving desired outcome/objectives

1. Coordination between centre & state ; local bodies
2. funding & human resource challenge
3. Lack of awareness among citizen
4. Poor quality of asset, Corruption, bureaucratic apathy

Way forward

1. Whole of Government & whole of society approach
2. Participation of civil society / NGO's for community awareness & participation
3. Mandatory social audit & Pay Jal sanrakshan
4. Best Practices - Gujrat : 100% target Achieved

since 68% of India is prone to drought it is necessary to give necessary push & energy to Jal Jeevan Mission to ensure Accessibility and availability of safe drinking water to citizens

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Q.5 बैटरी ऊर्जा भंडारण प्रणाली (बीईएसएस) से आप क्या समझते हैं? इसके अनुप्रयोगों पर चर्चा कीजिए और यह भारत के ऊर्जा कार्यक्रम में किस प्रकार क्रांतिकारी बदलाव ला सकता है। (150 शब्दों में उत्तर दीजिए) 10 अंक

What do you understand by Battery Energy Storage Systems (BESS)? Discuss its applications and how it can revolutionize the energy program of India. (Answer in 150 words) 10 Marks

Battery Energy storage systems are technology, processes, system that helps in storing and preserving energy for varied uses

example Hydrogen fuel cell technology

They help in storage of electricity and fuel which can be used, replinished and reused.

Applications of Battery Energy storage system

(1) in automobile sector: necessary for transition to Electric vehicles

(2) in agriculture sector: to address concerns with fluctuating electricity; improve irrigation

(3) in cold chain infrastructure (4) e-VIN

(4) to improve efficiency of electricity

(5) to address issues of Renewable energy: solar; Wind; and hybrid energy

↳ ~~their benefits~~

How it can revolutionize energy program of India

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1) improve efficiency of solar power plant; Wind
↓
excess power during day time can be stored and used

2) aid transition towards Renewable Energy
↓
thus helps in achieving Net zero by 2070 goal

3) Promotes Energy mix target ⇒ 50% by 2030

4) Helps in decarbonisation of India's economy

Challenges to Battery Energy storage system

1. High cost of technology
2. Environmental concerns associated with manufacturing
3. dependency on Rare earth minerals : high import
4. safety & regulatory challenges

However, the recent step of PLI scheme for Battery Energy storage system is set step in the right direction which help in achieving the goals set under RANCHAMRIT

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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 aims to sending three humans to outer space & demonstrate indigenous technological capacities to achieve the same

Developments in the Gaganyaan mission

1. testing of reusable launch vehicle
2. Aborted recovery module tested
3. Training of astronaughts in Russia completed
   Now undergoing training at USA
4. safe return technology (PARACHUT technology) developed

Challenges in the Gaganyaan mission of ISRO

1. developing required technology indigenously
2. frequent delay & postponement in the date of mission
3. safe return technology : making it full proof to ensure safety of astronaut is challenging

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Possible benefits of the mission for society

1. to join the unique club of nations : who demonstrated such technologies like USA; Russia and China
2. Enhance global stature of India & ISRO
3. will further encourage private sector participation in space sector
4. Increase our understanding of outer space
5. May give boost to space tourism in near future
6. Helps in development of scientific temper ; promote space awareness etc

Addressing the challenges of Gaganyaan is essential to achieve the possible outcomes. Gaganyaan will lay the foundation of future transition of ISRO and space sector hence looked with great cautious optimism

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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 is considered as 'fuel of future' since it is environmentaly friendly, clean & releases only water as its byproduct.

To utilize the potential of green hydrogen, Government of India launched,

National Green Hydrogen mission

aims and objective of NGHM:
- i) 5 MMT production of Green hydrogen
- ii) India as Green hydrogen hub
- iii) 60 - 100 GW capacity of electrolysers
- iv) 150 - 175 GW of renewable energy installed
- v) ₹ 8,00,000 crore investment
- vi) generating 6 lakh jobs.

Advantage: tackling climate change & pollution

1. Green hydrogen: clean & Green source of fuel with low or no emission
2. decarbonization of polluting sector:
   - (a) Iron & steel industry; fertilizer industry etc

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3. improve efficiency & utilisation of Renewable energy (Eg) surplus solar energy used for electrolysis

4. Reduce dependency on fossil fuel : reduce air pollution; Green house gases

5. Achieving Net zero goal by 2027

6. Promote transition towards EV

Challenges / impediments

1. Hydrogen embrittlement
2. Highly inflamable nature of hydrogen
3. cost of Green hydrogen = 3 times of Grey hydrogen
4. inadequacy of existing pipeline infrastructure
5. High cost of technology etc

Steps taken →
- PLI scheme for Advanced chemical batteries
- 100% FDI permitted for Green hydrogen production

Green hydrogen has the potential to tackle concerns of climate change, pollution & improve our self reliance. Thus the challenges needs to be addressed holistically and achieve Atma Nirbhar.

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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, the Joshimath Land subsidence / sinking has attracted global attention and call for effective management & environmental conservation in the Himalayan region.

Reasons behind Joshimath disaster
- → unplanned urbanisation & development
- → development beyond carrying capacity
- → inadequate drainage system
- → Hydroelectric power projects like TAPOVAN
- → Geological factors: movement of plates along main thrust

Lessons for disaster management
- → 1. importance of planning: as per sensitive geography of the region
- → 2. following Preventive guidelines: ECBC code not adhered → leading to development of cracks
- → 3. investment in structural measures: for effective rehabilitation in case of disaster

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4) effective early warning system : to prevent hazards turning into disasters

5) Capacity building : of local people ; NDRF and SDRF etc

Key lessons for environmental conservation

1) deforestation in sensitive Himalayas → like invitation to disaster

2) Unsustainable tourism → exaggerate the situation

3) development project like Char Dham, hydroelectric projects ⇒ must adhere to Environmental Impact Assessment norm

Way forward

1. sustainable tourism promotion
2. Mishra Committee recommendation : Afforestation; No development works if need to be implemented
3. SECURE HIMALAYA - implemented in spirit
4. EIA norms effectively adhered

Disaster in Jashimate is like an eye opener. The learnings should be used to achieve balance between development & sustainability

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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

The Amritpal style episode, increase in demand for Khalistan highlighted that the Khalistan issue is still simmering.

example Recent attack on police station in Punjab

Reason behind recent developments

① Radicalisation of youth : through social media as per IB report

② Geopolitical reason : support to Khalistan issue from across the border - Pakistan, Canada etc

③ social reason : increase in menace of drug ; feeling of deprivation

④ Political reasons : anti national elements exploiting the alienation, anomie for personal & political gain

⑤ Geographical reason
- closeness to border areas
- Proximity to Golden crescent
- trafficking of weapons from Punjab border

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Impact of recent developments

1) international : India's relation with Canada, UK, Australia etc being tested
2) social : create unrest in the society, fuel communalism & fundamentalism
3) organized crimes get boosted due to diversion of state police towards Khalistan issue
4) economical : affect market sentiments, investment

Measures to handle it

1) Legal measures : appropriate use of UAPA Act; NSA Act to deal with rogue element
2) Technological measures : effective monitoring of social media to prevent radicalization like Cybercrime & Escada
3) Political measures : increased cooperation between centre & state
4) Security measure : enhance capacity of state police to tackle issue of drug, organized crime
5) Governance measure : focus on 'winning the heart & mind'
6) international measure : diplomatic engagement to tackle funding, support to such organizations etc

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Q.10 ड्रोन संचालन में आसानी और साथ ही इसके संचालक की अनामिता, भारत की सीमा सुरक्षा की चुनौतियों में वृद्धि करती है। विस्तारपूर्वक वर्णन कीजिए और सीमावर्ती क्षेत्रों में ड्रोन समस्या से निपटने के लिए सुझाव दीजिए।

(150 शब्दों में उत्तर दीजिए) 10 अंक

The anonymity and ease of drone operation contribute to the challenges of India's border security. Elaborate and give suggestions to tackle the drone problem in border areas.

(Answer in 150 words) 10 Marks

Drones are ~~UAS~~ unmanned air vehicles [UAV's] which can be remotely operated. Since they offer anonymity and ease of operation which is creating new challenges for border security.

Drones → challenges of India's border security

1. Used for security surveillance in border region by enemy forces
2. drone based attacks on security establishment.
   Example Punjab air base attack
3. drones as vehicle of weapon trafficking
   Example Rajouri & Punch sector
4. limited capability & infrastructure : to track, trace & shoot the drones
5. Drug trafficking ; counterfeit currency ; & escaping border checks
6. cross border jurisdiction : difficult to pursue anti social, anti national element

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Suggestions to tackle drone problems in border area

1) Technological measures : such as Drone Jamming technology ; Precision shoot technology etc needs to be enhanced

2) Human resource : specifically devoted toward managing threats of drone

3) Regulatory measures : effective regulation of domestic drone industry (eg) No FLY ZONE guidelines

4) Governance measure : involving local people in Drone related security challenges

5) surveillance measure : (a) satellite surveillance ; electronic surveillance etc to spot, trace & destroy the drones etc

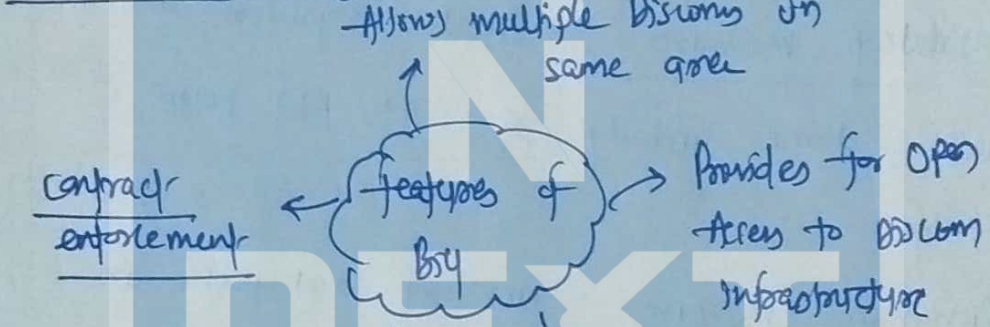
The drone technology has serious implication not only on border front but also on internal security front. Thus the need of the hour is to tackle the threat effectively

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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 aims at amending the Electricity Act 2003, set up CERC and SERC to manage inter-state and intra-state electricity.



Advantages for consumers

1) consumers get benefited by enhanced competition
2) it may improve delivery of services
3) bring efficiency in electricity supply
4) empowerment of citizen : Grievance redressal mechanism

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Advantages for DISCOMs

1) Proper Asset utilisation through Open Access norms
2) Generate additional revenue
3) Help in addressing mounting debt in the sector
4) enhance market share → multistate operation

Advantages for environment

1) Renewable purchase obligations becomes mandatory
2) further boost investment in Renewable energy
3) decarbonization of Power sector in long term

Shortcomings of Electricity Amendment Bill

1) Centralisation tendencies in certain provisions

example SERC Appointment committee

2) creating hustle between CERC & SERC over registration issues (multiple state DISCOMs)
3) Centre & state - federal dispute : Power is state subject
4) Ambiguity in provisions ex Contract enforcement ; guidelines to DISCOMs etc

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Measures to overcome these shortcoming

① creating GST like council to address concerns of centralisation

② clearly demarkating roles and responsibilities, functions of CERC & SERC

③ Cooperative federalism instead of confrontational approach to take states on board

④ Address the ambiguity in the provisions as recommended by Joint Committee of parliament.

Given the distressed position of DISCOMs & power sector, ensuring the SDG-7, there is need for addressing the concerns associated with both & ensure its effective implementation through cooperative federalism

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

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

The recent publication of Hinden berg report highlighting maladministration of Adani shares brought the role of SEBI in limelight.

SEBI is a ~~statutory~~ body created aftermath of 1991 LPG reforms to manage, monitor the India share market.

The goal of SEBI is to protect investors especially small investor, regulate the share market and deepen it further

Important Roles played by SEBI

1. Regulate corporate functioning as per law
2. ensure corporate Governance in the country
3. Prevent malpractices like Insider Trading
4. Protect investors from fraud practices
5. settle dispute between investor and corporate
6. Education and awareness role

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Challenges faced by SEBI

1. regulating ponzi scheme
2. corporate scams : 1992 scam; Sahara scam; Satyam scam etc
3. Human resource challenge : inadequate human resource with increasing work load
4. effectively monitoring corporate functioning
5. Nexus between Businessmen and Chartered Accountants
6. Legal Challenges : ineffective power; utilisation of power
7. issues with securities Appellate Tribunal : delays in solving case; conflicting judgements etc

Reforms needed

1. Investor Awareness programme → to prevent frauds & ponzi schems
2. effective regulation of corporates → to prevent scams
3. Ban on short selling apart from insider trading similar to USA Law

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(4) effective human resource management.

(5) effective implementation of Udaya Dotak Committee recommendation.

(6) Amendment to SEBI Act : to make it relevant for 21st century, power and autonomy to

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

(250 शब्दों में उत्तर दीजिए) 15 अंक

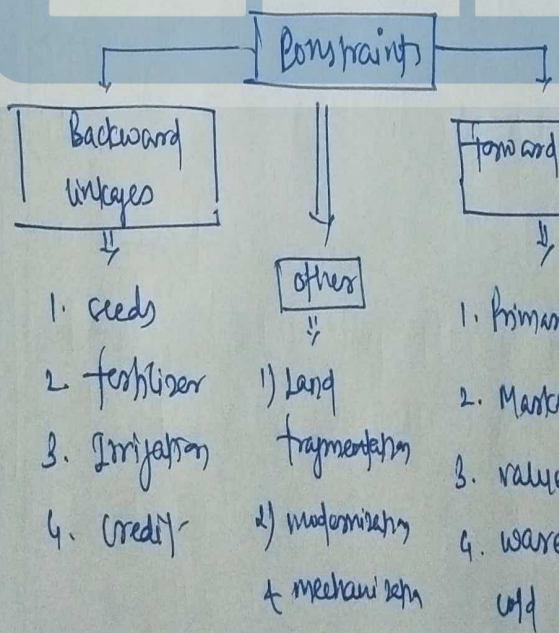
Despite being a major contributor to the Indian economy, the agriculture sector is plagued by several constraints that impede its growth and development. Discuss the role of technology in overcoming these constraints.

(Answer in 250 words) 15 Marks

Indian agriculture contributes to 18% of GDP; provides employment to 46% of workforce. [Economic survey 2021-22]

Agriculture ensures sufficient supply of raw material for industries (e.g. cotton; Rubber; Coffee, tea etc. Also ensures food security, helps in inflation management etc.

Despite these, it is plagued by several constraints that impede its growth & development.



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1) **Seeds** ⇒ ~~Low~~ High replacement ratio; poor quality seeds

2) **Fertilizer** ⇒ Urea dependency **N:P:K = 6.7 : 2.4 : 1**

3) **Credit** ⇒ 85% 40% of agricultural credit from Non institutional route ⇒ indebtedness & suicide

4) **Irrigation** ⇒ 65% of agriculture rainfed in nature

5) **Land fragmentation** ⇒ 87% of farmer small & marginal in nature; 1.08 hectre/person landholding

6) **Farm mechanisation** ⇒ 90% USA, 75% Brazil, 40% India

7) **Processing of food** ⇒ 75% USA, 50% China, 10% India

8) **Marketing** ⇒ dependency on APMC's

9) Cold chain & warehousing ⇒ lack of availability → leading to food wastage of 92000 cr annually

Role of technology in overcoming these constraints

① Seeds → Biotechnology ⑥ Bt-cotton
→ Traditional ⑦ BIJAMRUTA under Zero budget natural farming

② Fertilizers → Nanotechnology ⑨ NANO UREA
→ Biotechnology ⑧ Biofertilizers

③ Credit ⇒ using digitalization with JAM trinity → financial inclusion → Access to credit

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④ Irrigation → micro irrigation technology : 9% efficiency in water use
→ Precision agriculture using ICT

⑤ Land fragmentation : farmers connect portal : to connect farmer; FPO's etc ⇒ Land consolidation

⑥ Farm mechanization : can be tackled through mobile application ; common service centre by connecting farmers to custom hiring centre

⑦ Processing of food : through use of biotechnology, nanotechnology

⑧ Marketing issues : Addressed through digital solutions like e-NAM

Challenges with these technologies

- Digital divide
- High cost
- Lack of Awareness
- Small & fragmented landholding
- Poor & inadequate rural infrastructure

Way forward

- Promoting digital literacy PMG-DISHA
- start ups through Agriculture Accelrator fund
- Centre - state cooperation : Agricultural reforms

Effective adaptation & utilisation of these technology not only address these constraint but also helps in realisation of goal of Doubling of farmers income

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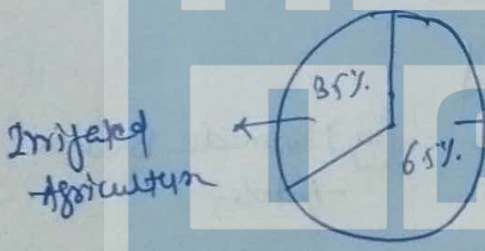
Q.14 पर्यावरण एवं प्राकृतिक संसाधनों पर सिंचाई के प्रभाव का मूल्यांकन कीजिए, और कृषि में सिंचाई पद्धतियों की संधारणीयता और समता सुनिश्चित करने के लिए उपाय सुझाएँ। (250 शब्दों में उत्तर दीजिए) 15 अंक

Evaluate the impact of irrigation on the environment and natural resources, and suggest measures to ensure the sustainability and equity of irrigation practices in agriculture.
(Answer in 250 words) 15 Marks

Irrigation refers to practice of artificial supply of water to ensure crop productivity, soil productivity and boost agricultural production

Types of irrigation

- Surface irrigation → Canal
- Tubewell → Borewell
- Micro irrigation → Sprinkler, Drip



Impact of irrigation on environment & natural resources

- POSITIVE
- NEGATIVE

Positive impact

1) management of flood & drought (e.g. Sardar Vallabhai Patel reservoir (Gujrat)
2) ensures Ground water table at optimum level
(e.g. Bhakra Nangal in Punjab–Haryana region

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(3) Biodiversity protection & promotion (eg) Chilika lake

(4) Aquaculture & fishery : Act as important natural resource for food processing industry

(5) offers ecosystem services (eg) Wular lake → promotes tourism and livelihood

Negative impacts;

(1) Deforestation of large land (eg) By dams such as Hirakund; Tehri dam etc

(2) affects natural flow of river

(3) causes problem of siltation & enhances vulnerability of flooding

(4) displacement of tribals (eg) Narmada Bachao Andolan

(5) affect Biodiversity & ecosystem due to deforestation

(6) excessive use of tube & borewells : causes ground water depletion ; alkalinity of soil

(ea) Punjab & Haryana region

measures to ensure sustainability & equity & irrigation practices in agriculture

(1) Shift from surface irrigation to Micro irrigation

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(2) focus on integrated watershed development than constructing mega dams

(3) Traditional irrigation techniques which have minimal impact on environment should be promoted

Example: NAHAR in Bihar; Bandharas of Maharashtra; Kareez system of Karnataka etc

(4) Create awareness about sound irrigation practices

Steps taken

1. Micro Irrigation fund
2. Per Drop More Crop (PM-Krishi Sinchayi Yojana)
3. PM KUSUM for solar pumps based irrigation
4. Atal Bhujal Yojana : to ensure community owned & community managed irrigation

Best Practices ⇒
1) Mission Kakatiya of Telangana
2) Jalyukta Shivar of Maharashtra

At the times when India is witnessing "water stress", it is important to enhance irrigation efficiency, water use efficiency to ensure sustainability & equity in irrigation practices of agriculture

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

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

Generative AI [Artificial Intelligence] refers brand of AI technology which uses algorithm, datasets and pattern etc to produce and generate new information, product etc

Example CHAT GPT ; BARD etc

It is relatively new & emerging field of technology which has the potential to push the boundries of innovation in near future as demonstrated below

Potential of Generative AI

① **Education** ⇒ New content creation; changing pedagogical approach etc

example: GPT assisted student learning

② **Health** ⇒ development of new drug ; formulations etc

example MIT used Generative AI to develop Super Antibiotic

③ **Creative Art** ⇒ Generative AI can transform the painting, music, etc **example** Muzify. AI

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created song & music on its own

(4) **Business** ⇒ Generative AI can be used for launch of new products; protect its IPR; save cost on clerical works etc

(5) **Law & order** ⇒ Generative AI can improve law & order, criminal identification etc if supplemented with Facial Recognition Technology etc

Despite these potentials for innovation there are apprehensions over generative AI:

Societal impact of Generative AI

(1) impact on jobs: Generative AI may replace work of clerical nature

(2) impact on creativity (3) Rotoscope in Hollywood

(3) may further create digital divide: AI Generative AI accessible to only few

(4) accelerate, exaggerate social inequality

(1) **Generative AI**
⇓
Deepfakes + misinformation
⇓
communalism; mob lynching; social instability

(2) Biased algorithm of Generative AI

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other challenges with respect to Generative AI

(1) allegations of copyright violations [ex] ChatGPT banned in Italy

(2) can be misused [ex] cheating in exams using Generative AI

(3) concern with accountability of new information; misinformation; product developed by Generative AI.

way forward

→ 1) ethical & responsible use of Generative AI

→ 2) Effective regulation and Governance of technology

→ 3) International collaboration to frame uniform standards of application

→ 4) focus on further Research & development: to utilise its potential for human development; sustainable development

→ 5) upskilling, reskilling of workers who are getting affected by technology

Like other technologies, Generative AI also have its benefit & challenges. Thus the need of hour is to maximize the benefits & minimize the challenges.

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Q.17 नवंबर 2022 में मिस्र में COP27 संयुक्त राष्ट्र जलवायु परिवर्तन सम्मेलन में लॉन्च किये गए "जलवायु के लिए मैंग्रोव गठबंधन" के उद्देश्य को स्पष्ट कीजिए। उष्णकटिबंधीय देशों की तटीय पारिस्थितिकी को बनाए रखने में मैंग्रोव के महत्त्व पर विस्तार से प्रकाश डालिए। (250 शब्दों में उत्तर दीजिए) 15 अंक

Explain the purpose of the "Mangrove Alliance for Climate" launched at the COP27 UN Climate Change Conference in Egypt in November 2022. Elaborate on the importance of mangroves in maintaining the coastal ecology of tropical nations. (Answer in 250 words) 15 Marks

Mangrove Alliance for Climate was launched at cop 27 of UNFCCC - it is a intergovernmental alliance supported by private partners, UN agencies, civil society etc.

The purpose of Mangrove alliance for Climate is to preserve, protect and promote the mangrove ecosystem. It aims at enhancing greater cooperation and collaboration to halt & reverse the damages caused to mangrove ecosystem

Purpose of the alliance is also to generate awareness highlighting importance of mangroves, tackle climate change & disasters through strengthening mangrove ecosystem

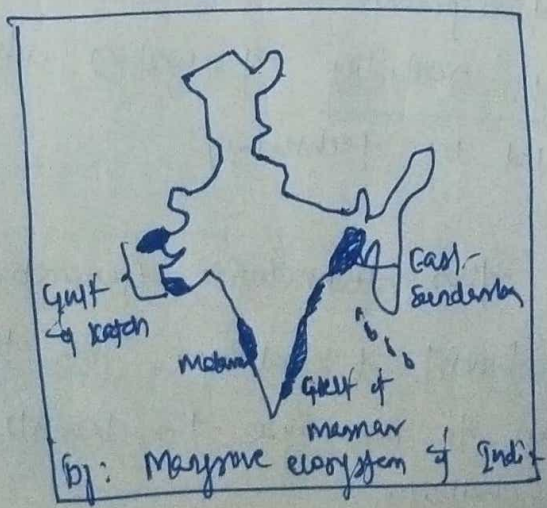


Fig: Mangrove ecosystem of India

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Importance of mangrove in maintaining coastal ecology of tropical nation

(1) provides various ecosystem services

example mangrove timber wood

(2) Prevents coastal erosion

example Malavan, Ratnagiri (Maharashtra)

(3) Protect coastal region from cyclones, storm surges ⇒ Act as BIOSHIELD

example Andaman Nicobar Island; West Bengal

(4) Highly productive ecosystem: support coastal livelihood

(5) Prevents salt water intrusion into mainland area example Gulf of Mannar mangrove

(6) Thriving biodiversity: attract migrant species; habitat for certain important species

example Bengal Tiger of Sundarban

Threats or challenges faced by mangrove ecosystem

(1) overuse & extraction of mangrove wood leading to destruction of mangroves

(2) Rising sea level and climate change

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③ unsustainable tourism

④ expansion of agriculture; brown culture & aquacultures in the coastal region

⑤ Chemical pollution by releases from industries etc

Steps taken to protect
- → Coastal Regulation Zones 2019
- → MISHTI programme [Budget 2023]
- → Coastal Aquaculture Authority Act 2023
- → Mangrove Alliance for Climate

Way forward

1) enhance community participation in management of coastal ecosystem / mangrove ecosystem
2) promote sustainable tourism
3) effective implementation of CRZ rules
4) Revival & Restoration of lost mangroves through "whole of society approach"

Mangroves play critical role in not only providing ecosystem services but also important to tackle climate change; increasing disasters etc. Thus there preservation, protection & promotion should become higher priority

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Q.18 आपदा प्रतिरोधी बुनियादी ढाँचे के लिए गठबंधन का गठन भारत में आपदा प्रबंधन दृष्टिकोण को और अधिक मज़बूती 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

is partnership or organization of Governments, UN agencies & sponsored by India during Climate Action Summit 2019

It aims at improving the resilience of infrastructure across countries against increase in frequency & magnitude of disasters due to climate change.

formation of CDRI → bringing more robustness to Disaster management approach

(1) from reactive approach to proactive approach

(2) facilitation of Disaster prevention, mitigation & preparedness knowledge across globe

(3) facilitate technology transfer essential for adaptation & mitigation via TCFT between India & UN

(4) sharing of best practices

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Need for new strategy to tackle disasters in India

(1) to reduce vulnerabilities to increasing disasters (e.g. frequency of cyclones doubled in last three decades)

(2) Better preparedness to reduce negative impacts of disasters

(3) old strategy → reactive only : thus new strategy was needed for proactive approach

(4) to implement Sendai framework - goals and targets

(5) increase in frequency of drought, floods, heatwaves etc

(6) to institutionalise Build back better and Resilient Infrastructure in urban planning, economic development etc

Justification

(1) Causes of disasters : transnational in nature therefore CDRI & new strategy needed to bring convergence

(2) Climate Change : IPCC reports highlighted the increasing vulnerability of India

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- Global Climate vulnerability Index ranks India as 7th most vulnerable nation

3) Enhance Access to finance & technology

4) ensure protection of small Island nations; Global south; etc

5) Enhance resilience of Global supply chain in wake of increased vulnerability to disasters.

Challenges or issues with CDRI

1) financial challenges : no funding arrangements or commitments announced yet

2) Governance challenge : charter finalisation; secretarial functioning etc

3) cooperation Challenge : over technology sharing ; Lack of similar threat perception & interest etc

Formation of CDRI was a welcome step. However to make it successful and achieve its objective there is need to address these challenges effectively.

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

(250 शब्दों में उत्तर दीजिए) 15 अंक

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

(Answer in 250 words) 15 Marks

"Cybersecurity refers to process, tool, technique & adopted to secure ICT devices, infrastructure, network and cyber space."

→ As per Global cybersecurity Risk Index - India is the 3rd most vulnerable country for cyber attacks

AIIMS - our patient health services attacks

Business attack on

Recent Attacks

Black cat group

Kudankulam - nuclear power plant Attack

Need for urgent cyber security measures & policies

① for citizens → to protect their privacy
→ high digital illiteracy ⇒ increases vulnerability
→ use of old devices

② for Businesses → to protect client information
→ to protect trade secrets; IPR
→ ensure effective functioning

③ for Government → to protect critical infrastructure
→ to protect citizen data
→ ensure safe & secure cyberspace

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Key factors behind recent rise in cyber attacks

1. increasing digitization due to Covid-19 pandemic
2. use of Ransomware as proxy war by enemy countries / nation
3. New syndicate of organized crime have emerged in cyber space.
4. Adoption of technology without literacy, awareness ⇒ vulnerability increase
5. Low investment in cybersecurity
6. Lack of Global cooperation : since it involves transboundary operations

Impact of these attacks on various sectors

① on health sector : (eg) Patient data being compromised
→ Affect access to health services (eg) AIIMS attack

② on business sector : Ransomware attacks affect functioning of company; compromise client info; trade secrets, IPR etc are vulnerable to be exposed

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③ on pharma sector : Ransomware attack on vaccine developer ; Clinical trials etc affects investment

④ on nuclear sector ⓐ Kudankulam plant attack ⓑ such information can be used to misuse nuclear energy by antisocial element

⑤ Impact on economy : unsafe cyberspace may defer investment ; affect employment generation etc

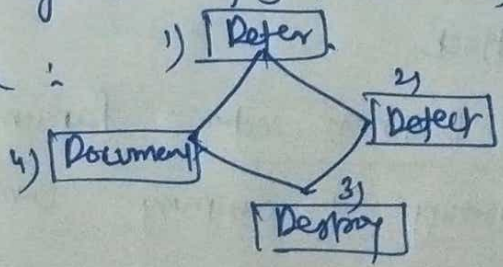
Way forward

① Implement Gulshan Rai Committee recommendations
→ reducing dependency on foreign servers
→ increase expenditure on cyber security

② Revamped & reformed cyber security policy - old policy of 2013 not suited to present situation

③ Best Practices ⇒ (A) seperate cyber command (USA)
(B) Cyberdome project (Kerala)

④ follow 4 D principle :



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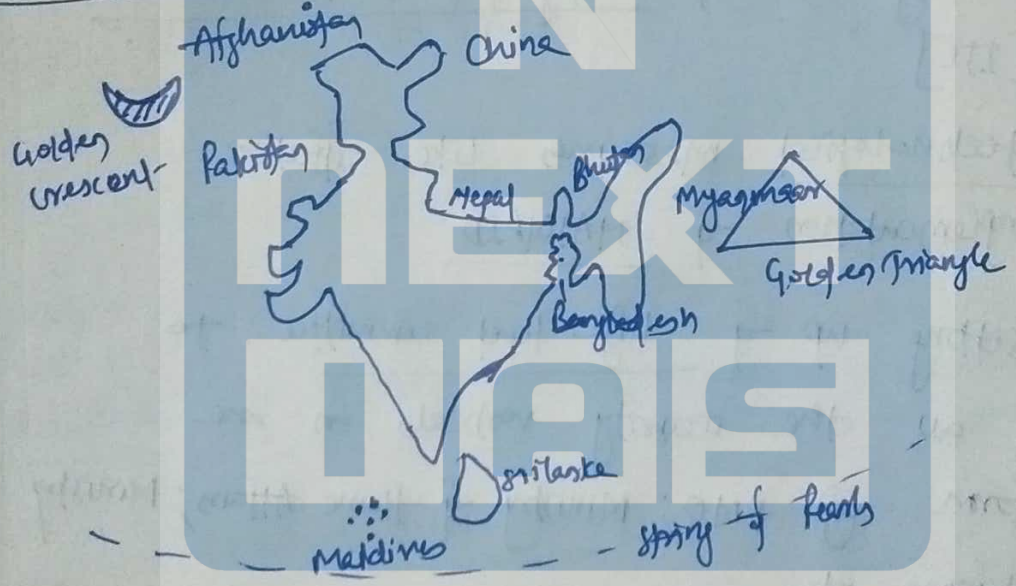
Q.20 सीमा सुरक्षा के संदर्भ में, तटीय और स्थलीय सीमाओं के प्रभावी और कुशल प्रबंधन को सुनिश्चित करने के लिए विभिन्न सुरक्षा एजेंसियों के बीच सहयोग और समन्वय को कैसे बेहतर बनाया जा सकता है?

(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

Recently, the parliamentary standing committee has called for increasing cooperation and coordination between different security agencies for effective border management.



Need for cooperation & coordination

(1) effective sharing of intelligence across forces
   (a) NATGRID
(2) India follows one border one force: multiple forces without cooperation affect security
   (a) Mumbai (26/11) terror attack

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(3) tackling modern threats of drones use; use of new routs like marine routes etc

(4) Boost interoperability of operations and forces

How to improve cooperation & coordination

(1) through Chief of Defense staff office: at the highest level → it can bring convergence

(2) setting up of integrated theatre commands [ITC]

(3) technological measures like effective implementation of NATGRID

(4) setting up of high level committee: to bring all the security vertical on one platform (e.g. PMO; Ministry of Home Affairs; Ministry of defense etc

(5) intermixing or intermix training to AGNIVEER

Benefits of increased cooperation & coordination for territorial borders:

1) tackling any Two front war

2) efficient deployment in case of adversity

3) use of weapons of different forces as per needs

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4) effective surveillance

for coastal borders

1) to check & deter piracy in Indian ocean region
2) tackle increasing presence of China in IOR
3) to act as first security border in region
4) fulfil objectives of SAGAR - security & growth for all in Region

Challenges

- multiple forces & ministries
- Differential mandates
- supervisory inforcety complex
- strong leadership + motivation to change

steps taken:

- Chief of Defense staff : Integration and modernisation goal
- Integrated Theatre command
- MAHGRID

With evolving & emerging security threats like drone attacks; cyber warfare; space warfare it there is urgent need for fastracking the integration of forces and bring synergy among them for ensuring strategic security