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(To be filled by candidate)

Name of Candidate : AREEBA NOMAAN

Roll No. : MT23RCA PA 111

Registration Number : ..... Date of Examination : 19/08/23

Exam Centre : Old Rajinder Nagar ☐ Bhopal ☐ Online ☐

Test - 3

Code : TC705

RCA 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.

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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. : .....

[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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3. Write legibly and neatly. Do not write in bad/illegible handwritings.
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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.

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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

Windfall tax refers to progressive taxation regime in which income rise contributes to gain in taxes.

Redistribution of wealth :

(i) tax/GDP ratio is just ~17%. which can be improved by windfall tax.

(ii) can increase the size of pie for redistribution. i.e. increase revenue from taxable income.

iii) reduces fiscal deficit thereby government can spend in creating

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physical and social infrastructure.

Eg: current fiscal deficit ~ 6.4%.

promote greater economic equality :

(i) wealth redistribution in line with Preamble and DPSPC Art 38, 39

ii) socio-economic development of vulnerable sections.

iii) reduce crowding out and govt borrowing.

Eg: recent debt/GDP ratio of central govt is ~ 60%.

However, inheritance tax, wealth tax etc can also improve government revenue.

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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 was constituted in 2016 was an objective of keeping inflation in desired bracket. i.e 4% ± 2%. [2% – 6%]

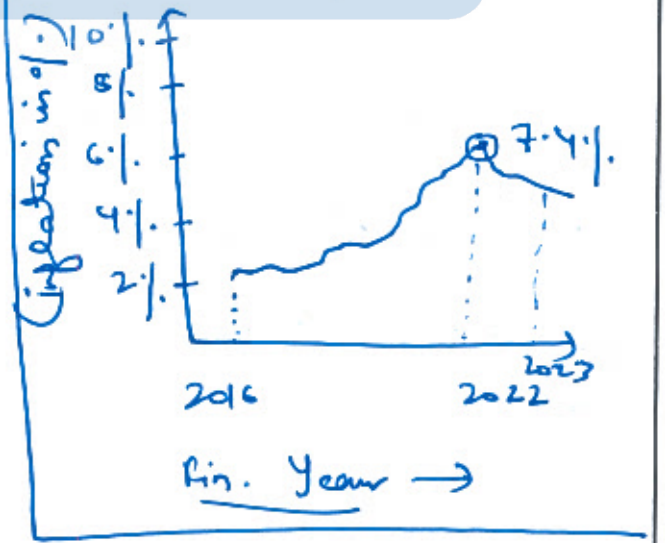
Perceived success

(i) addressed high inflation in country which is a hidden tax on poor.

Eg: before MPC inflation >10%.

(ii) trickle down effect on savings, investments.

Eg: improved savings and investments to ~ 30%.



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iii) stabilised requires fluctuations and foreign exchange reserves.

iv) improved net exports.

v) impact aggregate demand in economy.

challenges:

(i) supply side inflation needs structural measures like capital expenditure, agriculture supply chain improvement.
(Eg): recent food inflation, tomato Rs 300/kg

ii) imported inflation ← fuel, Fertilizers, can't be catered by MPC.

iii) logistics cost increases rural inflation. (Eg): recently 8% in rural area

Thus both monetary policy and fiscal policy needs to work in harmony for desired results.

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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 coarse grains referred to as "NUTRI CEREALS" and "SHREE ANNA" in recent Budget.

Eg: ragi, jowar, bajra.

Potential in promoting sustainable agriculture

(i) climate resilient crops: farmers may lose 15%-25% income due to climate change

(ii) drought resilient: hence suitable for 60% rainfed and dryland areas. Eg: Vidharbha

(iii) improves soil health by enriching nutrients like zinc, magnesium

(iv) less water, fertilizer requirement: other crops like Rice and sugarcane are water guzzling

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Improving food security :

(i) Hits on hidden hunger and malnutrition

(2g) : 37% stunting among children & 54% anaemia among women.

(ii) since climate resilient, therefore stable crop in times of erratic monsoon etc.

(iii) 85% farmers are small and marginal, millets reduces input cost.



Thus, MSP needs to be increased for millets, G20 initiative for promoting millet worldwide and FAO : International year for Millets 2023 need to be promoted.

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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 was launched to cater to growing water scarcity in country

Objectives

- 55 lts water per day per person.
- completion by 2024 in rural areas.
- clean and drinking water

Significance :

(i) important for accessibility of clean drinking water. (Eg); Rajasthan deserts

(ii) for health benefits clean water is sine qua non. (Eg): absorption of nutrients

(iii) reduces regional disparity in terms

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availability of water.

(Eg): rural and urban divide ↓.

(iv) saves women from time poverty. (Eg) carry water from distant wells.

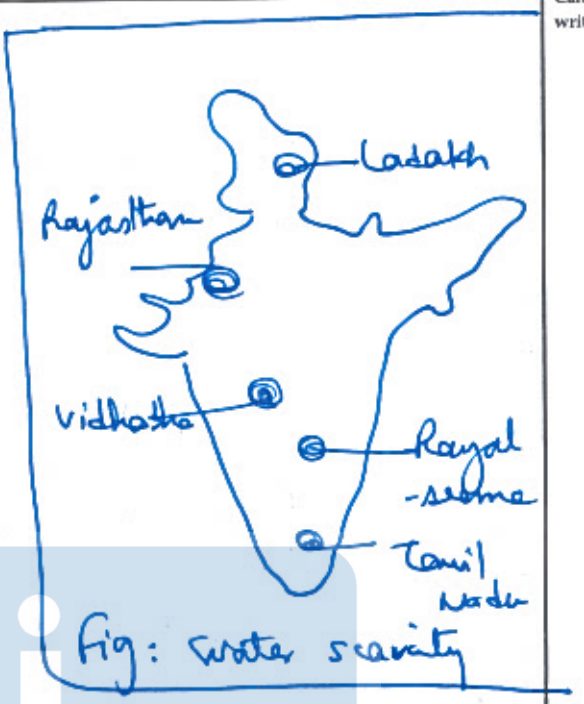


Fig: water scarcity

v) Industrial, MSME development in rural areas.



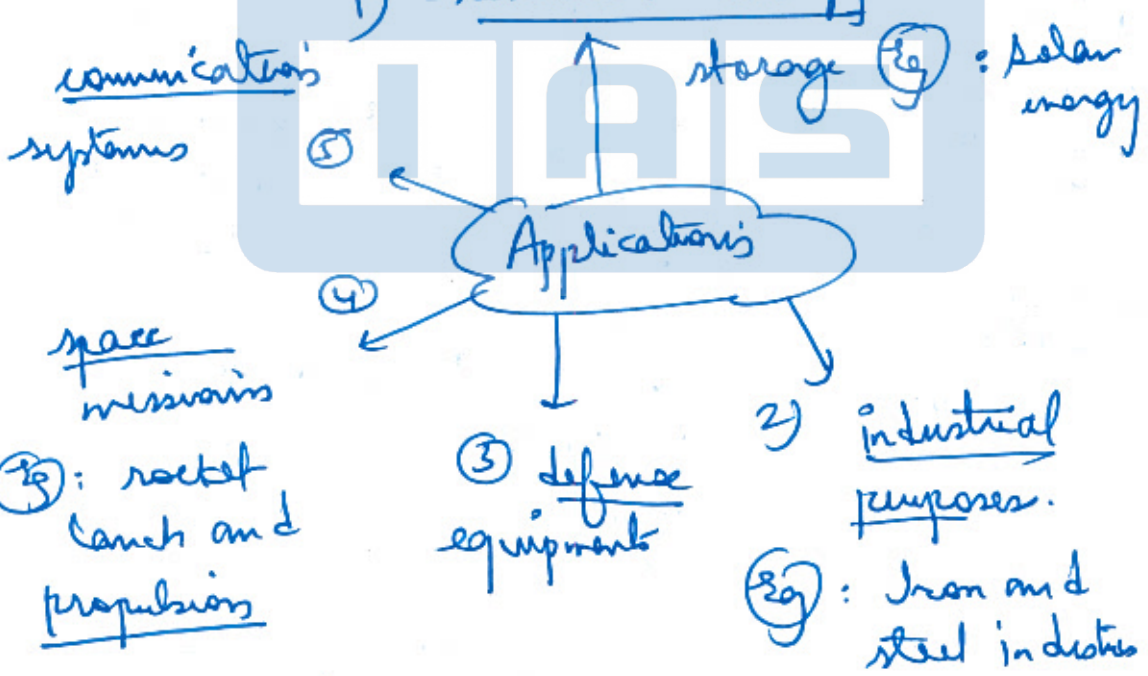
Thus, timely social audits, geotagging and monitoring on PRAGATI portal can help achieve target.

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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 (BESS) refers to storge equipments for energy derived through renewable and non-renewable energy sources.



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Revolutionise energy programme

① reduces intermittency in renewable energy. (Eg: solar and wind energy)

② makes India achieve target of net zero by 2070. and other Panchamrit goals.

③ indigenous domestic manufacturing of equipments.

④ skilled employment in the sector.

⑤ investments in R&D sector

For decarbonisation of economy and abating climate change BESS can be revolutionary, Thereby achieving SDG-13 (climate change) and SDG-9 (industries)

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Q.6 इसरो के गगनयान मिशन में हुए विकास और उपस्थित चुनौतियों पर संक्षिप्त चर्चा कीजिए। समाज के लिए मिशन के संभावित लाभ क्या हैं?
(150 शब्दों में उत्तर दीजिए) 10 अंक

Discuss in brief developments and challenges in the Gaganyaan mission of ISRO. What are the possible benefits of the mission for the society?
(Answer in 150 words) 10 Marks

Gaganyaan Mission of ISRO is first human spaceflight mission from India.

Developments :

(i) Reusable launch vehicle - Technology Demonstrator (RLV-TD) being succesfully tested.

(ii) GSLV-MK III for launch being succesfully built.

iii) cryogenic technology obtained.

iv) training of IAF personnel being carried for simulating space conditions

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Challenges :

(i) Russia-Ukraine war and sanctions on Russia affects the training module.

(ii) precision in launch of spacecraft.

(iii) stealth technology

iv) lack of world class infrastructure

v) R&D is just 0.67% in India

① state of art technology may be used for other purpose

Benefits

② Space tourism in future.

③ investment & R&D in India.

socio-economic development by trickle down

Recent Indian Space Policy 2023 will positively impact the missions.

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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

Recent budget launched National Green Hydrogen Mission with an ambition of :

1. Sumt of hydrogen by 2030.
2. 60 lakh jobs
3. high investment
4. indigenous technology

Silver bullet to tackle climate change

(i) electrolysis process is done through renewable energy source.

eg : solar and wind energy

(ii) reduces dependance on fossils fuels in industries, transport etc.

(iii) reduces ecological footprint by less use of water, CO_2 emission

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iii) Industries account for 28% total emissions and transport 9% of emissions in India. Thus, green hydrogen can reductions if



fig: process of obtaining green hydrogen

iv) reduce global warming, achieve net zero by 2070.

v) reduces fossil fuel waste etc

① reduces air pollution from fossil fuel (eg: PM 2.5, PM 10)

↑ textile pollution → ⑥ soil pollution as wastes will not be dumped.

⑤ reduces water pollution and carbon footprint

Production linked Incentive Scheme (PLI)

can help in growth of renewable energy sector and achieve SDG-7.

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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

Recent disaster in Joshimath posed multiple challenges in terms of landslides, avalanche, floods, cloudburst etc.

Key lessons for disaster management :

i) Hazard zonation mapping is essential for prevention of disaster.

Eg : Landslide susceptibility Map by ISRO.

ii) Hazard Vulnerability Risk Assessment can help in reducing casualties.

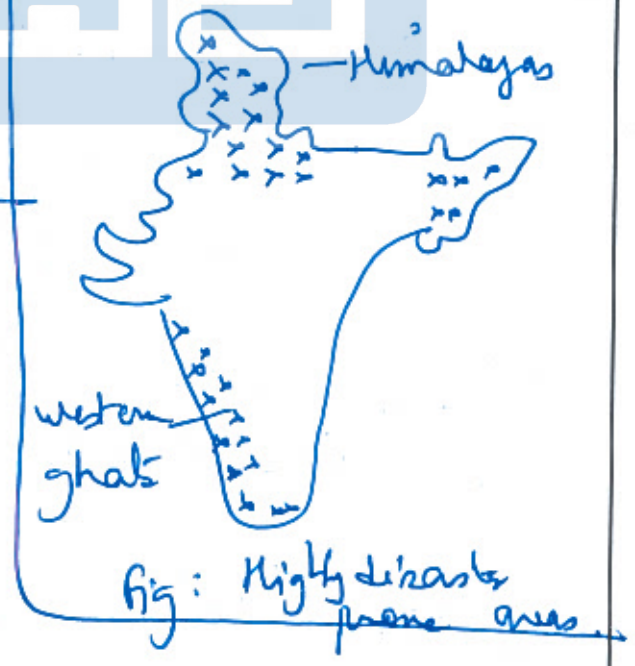


fig : Highly disaster prone area

Candidates must not write on this margin

iii) there are around 5000 glacial lakes, & 5000 ticking bombs', thus needs to be prevented.

iv) Early warning systems, standard operation procedure (SOP) in place.

v) effective recovery and rehabilitation.

Prevention, Mitigation → Preparedness → Response → Recovery

(DISASTER)

Environmental Conservation:

(i) Environmental Impact Assessment is essential: Rose moraine sand in Tehrinath is not fit for large hydrological projects.

ii) abating deforestation, unsustainable grazing

iii) sustainable tourism, keeping in mind carrying capacity.

iv) promotion of circular economy: electric vehicles, bamboo plates, renewable energy.

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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

Recently self proclaimed Khalistan leader got in news highlights over still brewing Khalistani radical trend in Punjab.

Recent developments:

(i) media appearance of leader of Khalistan group.

ii) movement to Nepal and other countries.

iii) radical trends in Punjab over secessionism

iv) growing issues of unemployment, farm failure, drugs addiction.

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Measures to handle :

(1) Policy level : UAPA, NIA Acts needs to be implemented in letter and spirit.

(2) Institutional : NATGRID, Narcotics Control Bureau (NCB) etc needs to work in harmony.

(3) International : agreement with regional countries like Nepal, Bhutan and other like UK, Canada where issues are rising.

(4) Societal level : improving educational outcomes, employment opportunities and deradicalisation.

(5) Farm crisis : needs to be looked to reduce simmering distrust.

Thus, multilayered approach needed for tackling the unrest in Punjab.

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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

Border security and effective management remains a challenge for India owing to 2 front war.

challenges posed by drones:

(i) Anonymous usage: by state and non state actors.

(ii): recent drone attack in Pathankot IAF station.

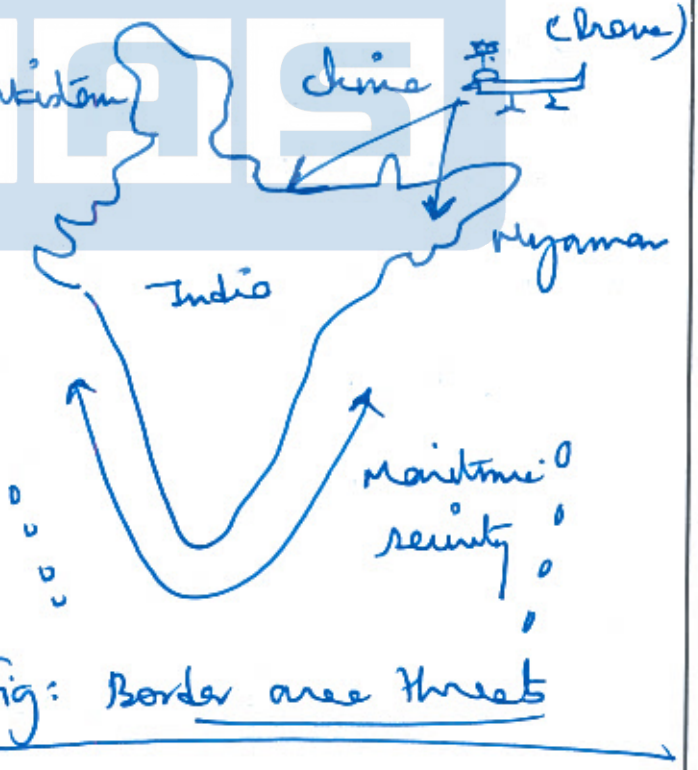


fig: Border area threat

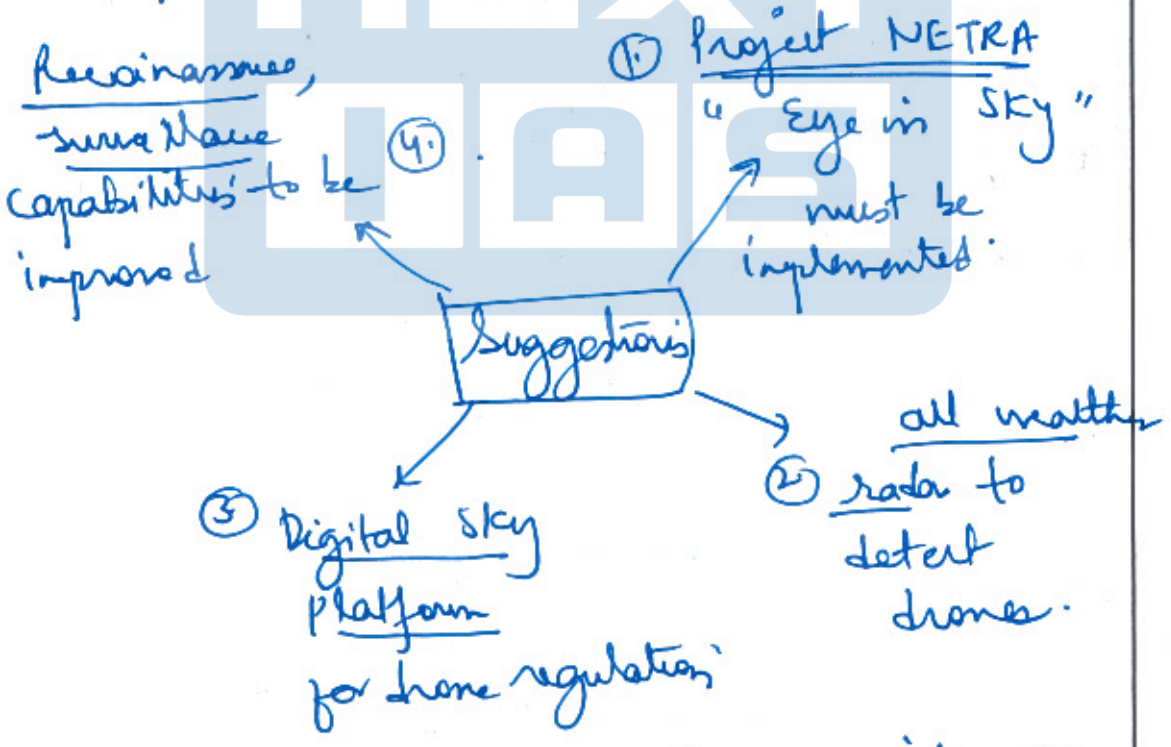
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ii) ease of usage : remote control, no special skills.

iii) lack of jurisdiction issues : airspace violations. (Eg) : drone usage near Aksai Chin, Pangong Tso lake.

iv) radicalisation of border populations

v) surveillance over critical infrastructure, communication lines, weaponisation of airspace.



CBIMS Model for border area security as recommended by Madhukar Committee needs to be implemented.

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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

Recent Electricity Amendment 2022 took place :

Advantages for consumers

1. reduced intermittency, 24*7 supply.
2. cheaper rates, more competition.
3. increased transparency and accountability.
4. online grievance redressal.

Advantages for DISCOMs

1. level playing field., smart meters
2. more competition, thereby better R&D, investment.

Candidates must not write on this margin

(3) reduces outstanding loans and losses.

(4) reduces AT&C losses (around 21% presently)

(5) better regulations, easy compliance.

Advantage for environment:

(1) renewable purchase obligations.

(2) more reliance on renewable sources.

(3) green corridor initiative

(4) reduced reliance on fossil fuel.

Shortcomings:

(1) cross subsidisation of electricity. (Eg: freebies in Punjab, Delhi

Candidates must not write on this margin

ii) ~~reduct~~ redundancy in compliance of rules and regulations.

Measures :

(1) Comprehensive Model Act with stakeholder approach.

(2) regulatory body must be independent in working

(3) transparency through e-governance

Thus, recent amendment helps in economic and social growth for Atma Nirbhar Bharat.

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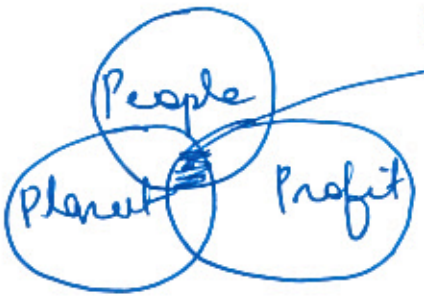
Q.12 भारतीय प्रतिभूति एवं विनिमय बोर्ड (सेबी) शेयर बाजार के नियमन और निवेशकों के हितों की सुरक्षा में महत्त्वपूर्ण भूमिका निभाता है। दिये गए कथन के आलोक में, सेबी के समक्ष आने वाली चुनौतियों पर प्रकाश डालिए और इस संबंध में सुधारों का सुझाव दीजिये। (250 शब्दों में उत्तर दीजिए) 15 अंक

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

SEBI is stock market independent regulator, statutory body in India.

Important Role

1. regulation of share market and online transactions
2. Regulates primary and secondary market (Eg: BSE, NSE etc)
3. interests of investors and other stakeholders
4. Environmental, Social, governance (ESG) norms:



Candidates must not write on this margin

Challenges faced :

① insider trading.

Eg : Ritesh Gupta in Metinvest.

② Colocation scam.

Eg : recently in BSE

③ Algo trading leads to inequitable.

④ short selling

Eg : Adani case.

⑤ Access to data, trasparency, availability.

Candidates must not write on this margin

Measures :

① Business Responsibility and Sustainability Report.

② use of technology to find out algo trading and co location scam.

③ ESG norms.

④ Competence intelligence gathering.

Candidates must not write on this margin

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 sector employs around 45% population, contributes 16-18% GDP and is essential for food security in the country.

Several constraints in agriculture sector:

(1) fragmented land (~1 hectare avg land holding)

(2) distorted cropping pattern: rice wheat system

(3) 60% rainfed and lack of investment

(4) lack of mechanisation

(5) environmental issues:

(6) climate change

upstream

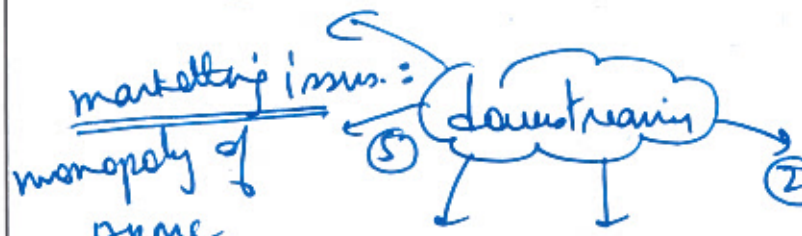
over use of fertilizer, water guzzling (Eg): sugarcane.

(Eg): pulses farmers own 15% machines only.

Candidates must not write on this margin

lack of harvesting technology (Eg: paddy stubble burning

(F)



(5) marketing issues: monopoly of APMC

(4) transport constraint: refrigerated vans.

(3) food wastage: FAO ~ 38%.

(2) lack of storage: cover and plinth.

Role of technology in overcoming :

(F) UPSTREAM LEVEL:

(a) drones: land title and digitalisation helps in less fragmentation, institutional credit: (Eg: SVAMITVA scheme

(b) GM crops and transgenic animals: help in climate resilient, better yield.

(Eg): BT cotton, milk production (↑).

(c) hybrid seeds: better production and yield. (Eg): Hyv seeds of rice, wheat.

Candidates must not write on this margin

(d) micro irrigation, Pressure tensiometer: optimum irrigation and fertigation.

(e) nanofertilizer: better utilisation
Eg: IFFCO Nanourea.

(f) precision farming: using AI, 5G, cloud computing. Eg: Farmers zone app, Meghdoot app

II DOWNSTREAM LEVEL:

(a) e-NAM: remunerative price realisation

(b) cold storage, vans: reduce wastage of perishable items.

(c) Happy seeder etc for reducing stubble burning.

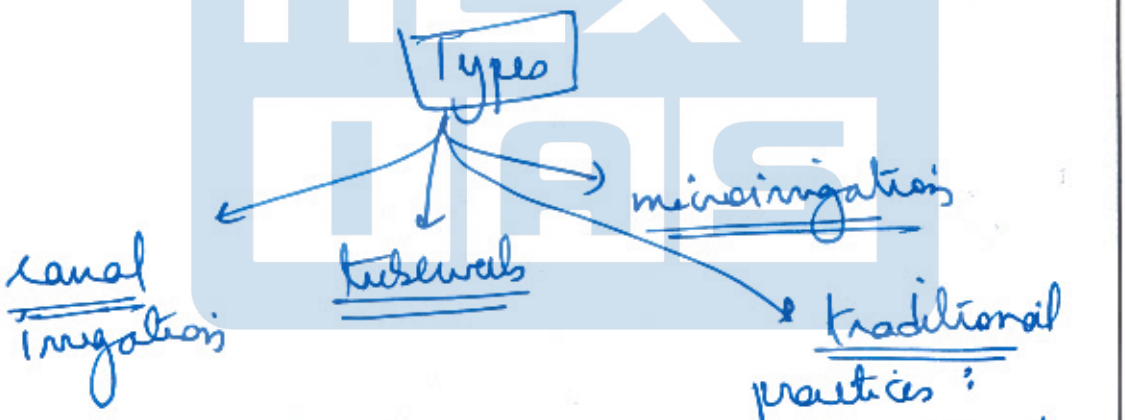
Agriculture Infrastructure fund and Sub Mission on Agriculture mechanisation can help in achieving SDG-12 i.e. sustainable consumption and production.

Candidates must not write on this margin

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

Agriculture contributes to 16-18% of GDP and essential for food security of country. Thus, irrigation becomes sine qua non for success of irrigation.



Contribution of canal and tubewell is highest in India. while microirrigation and traditional practices remains limited.

Candidates must not write on this margin

impact on environment and natural resources :

(i) irrigation through canal and tubewells leads to groundwater depletion : Eg : 70 cm/year depletion in Punjab.

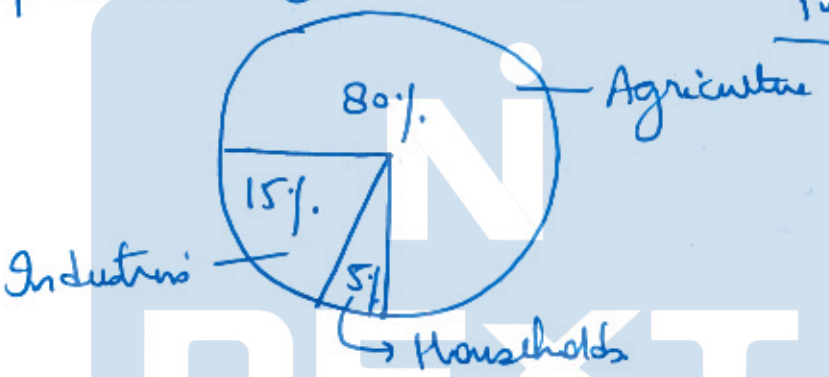


Fig: usage of groundwater

(ii) soil salinisation and degradation due to flood irrigation

Eg : Haryana, west U.P, Andhra Pradesh.

iii) release of methane gas and other toxic gases in irrigated fields.

iv) increases ecological footprint, also

Candidates must not write on this margin

impacts soil moisture, micro climate and thereby affect monsoon patterns

Measures for sustainable and equitable

(i) Policy level : incentivise microirrigation, fertigation technology. (Eg): Karnataka provides interest subventions.

(ii) Institutional : custom hiring centres, Krishi Vigyan Kendras (KVKs) for sustainable agriculture extension services.

(iii) agro climatic zonation and crop diversification (Eg) pulses, millets require less water.

(iv) nudge traditional practices like johads, tankas, rainwater harvesting.

(v) MoU with Israel for micro irrigation

It can help achieve sustainable production and consumption and intergenerational equity.

Candidates must not write on this margin

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

" Society lives on faith and progress on science "
— Carl Sagan

Remarkable contributions helped in strategic, socio-economic upliftment of India.

* Contributions of Dr. H J Bhabha :

(i) Nuclear power programme of India helped :

(a) strategically — Operation Smiling Buddha (Pokhran Test)

(b) economically — increased investment, R&D.

(c) renewable energy source — nuclear power plants

Candidates must not write on this margin

can power India for next 500 year. with clean source of energy.

(d) scientific investments : radioactive substances studies, neutrino observatory, helped in Astrophysics also.

(e) diplomatic : India-USA civil Nuclear deal and NSG waiver.

(f) technological prowess : Bhabha Atomic Research Centre (BARC) helped in India in breakthrough technology.

* Contributions of Dr. VA Sarabhai :

(a) conception of ISRO and other organisations like launch centers, telemetry centres etc.

(b) earliest rocket launchers of

Candidates must not write on this margin

India.

(c) Physics Research Laboratory in Ahmedabad.

(d) Community Centre for scientific Advancement for scientific awareness in community.

(e) inspired young scientists like Dr APJ Abdul Kalam.

(f) our successful missions like Navic, Mars Orbiter Mission, chandrayan etc owe to him.

(g) he along with Tata founded Tata Institute of Fundamental Research (TIFR)

Thus, helped India in strategic, technological and socio-economic advancement.

Programmes like Atal Tinkering labs, YUVIKA etc will promote young scientists from India.

Candidates must not write on this margin

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 refer to new breakthrough in artificial intelligence which produce new text, videos, audio etc based on machine learning.

Eg: conversational AI ChatGPT by openAI. and Google's BARD.

Potential to push boundaries of innovations

(i) Industries: helps in new research and development.

Eg: e-commerce business like Amazon.

(ii) Healthcare: imagine new molecular structure, medical devices. etc.

Eg: robotic surgeries.

Candidates must not write on this margin

(iii) Education : customised, interactive and immersive learning experience.

Eg : Virtual and Augmented reality.

(iv) Research & development : generates quick facts and evidence for better quality research.

(v) Deep learning / Nueral Networks : innovations as compared to imaginations of human.

(vi) digital asset creation ; like non fungible token, Metaverse, Blockchain based transaction.

Substantial challenges :

(i) Technology bias : based on race, gender : "created by white men"

(ii) Hallucinations : giving wrong

Candidates must not write on this margin

and biased facts and opinions.

(Eg): ChatGPT altered the perceptions of Americans towards AI.

iii) redundancy of human race: apprehension by Elon Musk that it may make humans irrelevant.

iv) job losers: coders, painters, writers, teachers etc may lose job in future.

(v) ethical concerns: deep fakes, propaganda, nudging behaviour of others.

vi) sentinel AI/ self aware AI: may reduce human to secondary citizens.

Hiroshima AI Global governance Process is a step in right direction for regulations to make "AI for All"

Candidates must not write on this margin

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 (MAC) was recently launched at COP27 of UNFCCC in Egypt. India also joined the alliance.

Purpose of MAC :

(i) reduce degradation of mangrove forests across the globe.

Eg : west coast mangroves in India are degraded.

(ii) abate deforestation and unsustainable use of mangroves.

Eg : for minor forest produce, ~~illegal~~ wildlife trade

Candidates must not write on this margin

iii) global awareness towards importance of mangroves in abating climate change.

iv) monitoring mechanism and agreement for protection, conservation and enhancement in line with REDD++ principle

v) preserve ecosystem services for intergenerational equity, protect indigenous knowledge and livelihoods

Importance in maintaining coastal ecology

(i) acts as bioshield against extreme events like tsunami, cyclone etc

(ii) nutrients recycling services.

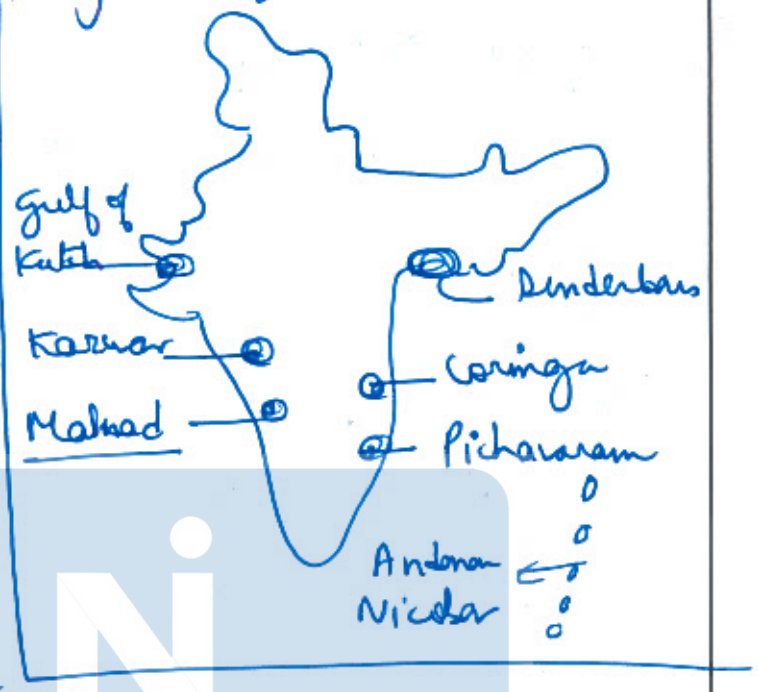
Eg: Sunderbans in west Bengal.

Candidates must not write on this margin

iii) important for maintaining hydrological cycle.

Eg: groundwater table.

Fig: Mangrove sites in India.



iv) reserves rich and endemic biodiversity. Eg: Royal Bengal Tiger, Kharai Camel in Gujrat

v) protects indigenious knowledge, medicines, livlihoods etc.

vi) carbon sinks (*)

Mangroves for future,

Mangrove cells in Mumbai, Bengal etc along with MAC can help in conservation of mangroves.

Candidates must not write on this margin

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) was launched by India in order to proactively tackle increasing disaster menace.

objectives :

1. Robust and resilient infrastructure
2. protect livelihoods, mortality ↓.
3. Build Back Better
4. international cooperation

Need for a new strategy :

1. shift from reactive - relief based approach to proactive - resilient based approach.

eg : themes of Sendai framework

Candidates must not write on this margin

(ii) SDG 1.5 and 13.1 calls for protecting poor from disaster vulnerability and increase resilience.

(iii) 60% recent disasters are anthropogenic in nature and have multiple hazard risk.

Eg: Joshimath disaster:

- EQ
- cloudburst
- landslide
- floods. etc.

iv) around 2 TND loss till 2024 due to infrastructure lost in disasters.

Eg: Telecommunication lines, railway tracks, roads, houses etc.

(v) disaster preparedness and mitigation helps in zero casualty approach.

(vi) around 60% of total geographic area of India is prone to EQs,

Candidates must not write on this margin

floods, landslides etc, hence resilient infrastructure is required.

(Eg: ~~granules~~ underground cables in Odisha, Bogibeel in Assam is EQ resistant

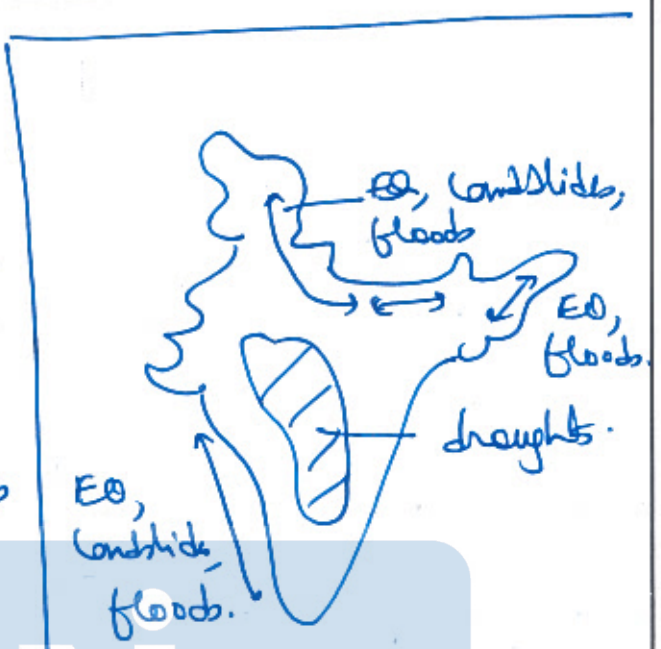


fig: disaster prone areas.

(vii) India is set to become most populous country as said by UNFPA, thus disaster resilient is required.

viii) prevention of Bhuj, Latur and Tehrimath like disaster.

ix) disasters are now international in occurence. (Eg: Nepal EQ, china floods.

Thus, international efforts are required else we will "globally sink if not globally swim"

Candidates must not write on this margin

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

Recently Kudankulam Nuclear power plant was targetted in cyber security attack. Also India figures in Top 5 countries in cyber security Risk by WEF.

Factors for rising trends :

(i) dependance on hardware for electronic use.

Eg: Rs 300 billion electronic import in 2021.

- Hardware - import
- Software - hack
- Data - breach

(ii) weak cyber security architecture : Eg: AIIMS ransomware attack

Candidates must not write on this margin

iii) data breach by companies for economic gains.

iv) non compliance by private sector for cyber security infrastructure

v) lack of comprehensive cyber security strategy? which includes SOPs.

vi) emerging technologies like cryptocurrencies, VPNs, dark net etc which are difficult to regulate.

vii) cross jurisdiction issues.

Eg: alleged chinese attack on Kudankulam power plant.

Impacts of attacks:

1. Economic: around 1.4 billion dollar loss cumulatively in 2024.

2. financial risk sentiments:

Candidates must not write on this margin

negatively impacts investments, R&D.

③ Loss critical information :

strategic data.

Eg : Banking details, healthcare depository of VIPs etc.

④ sovereignty and security of country :

territorial sovereignty, data sovereignty, can be compromised.

Eg : drone attacks, nuclear mishandling.

⑤. trickle down impact on industries, education sector etc.

Cybersecurity Policy needs to revamped and Comprehensive National tackling emerging issues., is needed for CERT-in Largescale digital literacy campaign

Candidates must not write on this margin

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?

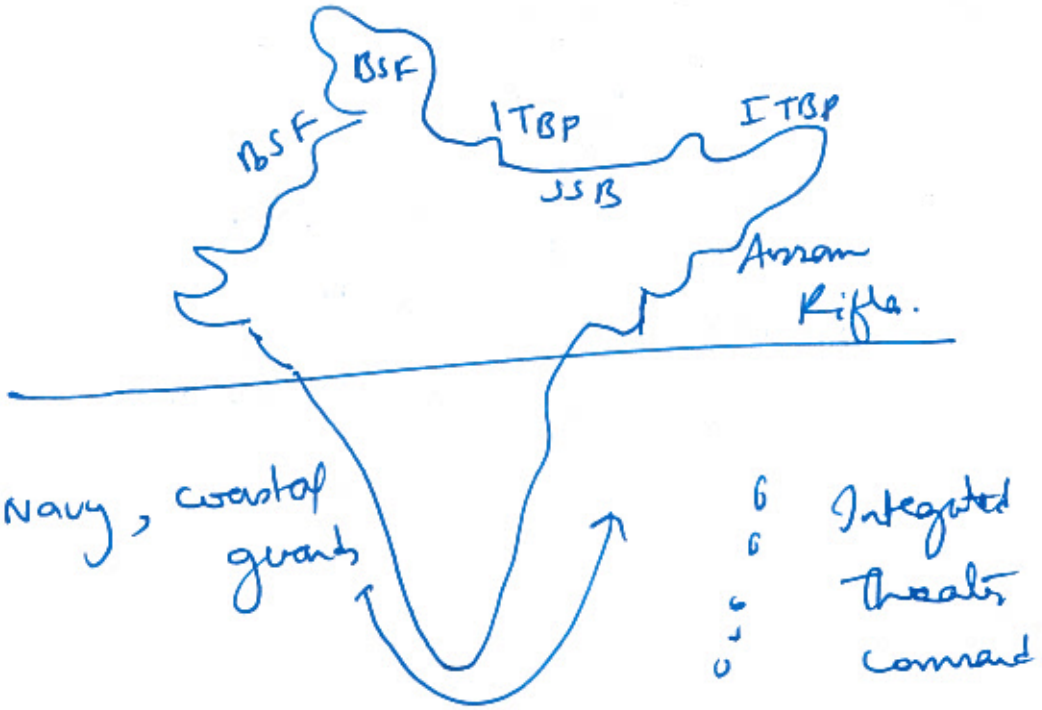
(250 शब्दों में उत्तर दीजिए) 15 अंक

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 shares land boundary with adversarial neighbours and has 7500km cost coastline. Thus border management is cruicial for security & unity.

Terrestrial borders and coastal borders cooperation and coordination



Candidates must not write on this margin

(i) ensures effective and efficient management of : resources
: personnel
: finances.
: weapons etc.

(ii) delay in decision making is reduced.
Eg : post of CDS

iii) sharing information critical for security.
Eg : NATGRID

iv) integrated effort in tackling hostile situations
Eg : Kargil Review Committee and Nasheeka Committee recommends Integrated Theatre Command.

Candidates must not write on this margin

v) breaking the silos in decision making.

vi) effective use of optimum resources.

Eg: CBIMS at Indo Pak, Indo Bangla Bangladesh Border.

Thus, coordination and cooperation is must for security of India. Comprehensive policy can be brought out.

Candidates must not write on this margin

Space for Rough Work

