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Registration Number : NIAS23000 20160 Date of Examination : 28 Aug

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.

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SUBJECT/PAPER
GENERAL STUDIES

Invigilator's Sign. : .....

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 finance minister has proposed to impose the windfall tax on the oil marketing companies.

WINDFALL TAX

(i) It is imposed on the windfall gains

(ii) Windfall gains are the unanticipated and unearned gain i.e they are earned without any innovative steps or investment decisions.

Eg due to Ukraine war, oil price have gone up and companies are earning the profits.

WINDFALL TAX WILL REDISTRIBUTE WEALTH

(i) Govt will earn revenue → spend

Candidates must not write on this margin

on the health & social infrastructure

(ii) Currently direct: indirect tax is ~~so~~ regressive. Windfall tax will rectify it.

iii) ~~Thus~~ Currently 1% richest own 40% wealth. Windfall tax will shift wealth to poor.

HOWEVER LIMITATIONS:-

(i) Dent investor's sentiment - poor ease of doing business (Rank 63)

(ii) Only a short term measure.

(iii) ~~Dif~~ Difficult to calculate the revenue & poor predictability.

iv) Against free market economy

↳ Economic freedom Index - 83. rank of India

Windfall tax be imposed one time after due consultation with industry.

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 decides the interest rate to keep to inflation in the range of 4±2%.

SUCCESS of MPC REGIME -

(i) Consultative decision making between RBI & govt.

(ii) Accountability - MPC is not accountable is inflation is beyond range for more than a quarter.

(iii) Autonomy - from the govt. influence - avoid conflict of interest as govt want to keep interest rate low to raise cheap loan.

iv) Transparency - MPC minutes are made public.

(v) MPC has managed to keep

Candidates must not write on this margin

interest rate in range through "accomodative" policy during CoVID.

CHALLENGES FACED BY MPC.

(a) High inflation in 2023 due to Ukraine war, CoVID etc

(b) Tackle only demand side aspect.
↳ Cannot control supply side aspect as infrastructure bottleneck

(c) Banks in India are dependent on public & private savings only many from RBI.

d) Poor monetary policy transmission

(e) Banks dont adhere to MPC decisions especially cooperative banks

To make MPC more effective separate Debt management Agency has to be constituted as currently RBI raises loan as well as decide interest rate

Q.3 भारत में सतत् कृषि को बढावा 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

Recent budget 2023-24 has called millets are shree anna and UN has declared 2023 as the international year of millets.

SUSTAINABLE AGRICULTURE -

(i) less input intensive
- need 40% less irrigation & 70% less fertiliser.

(ii) Suitable for rainfed areas
- Rajasthan, Vidharbha.

(iii) Promote soil conservation.

(iv) Practices like zero budget natural farming, ~~zero~~ mulching are suitable for millets.

v) Inclusively - as poor farmers & tribals can grow them.

vi) Rising MSP - increases the profitability

Candidates must not write on this margin

iii) FOOD SECURITY -

(i) Nutric - cereals - Fig 1 show the condfortion of the millets

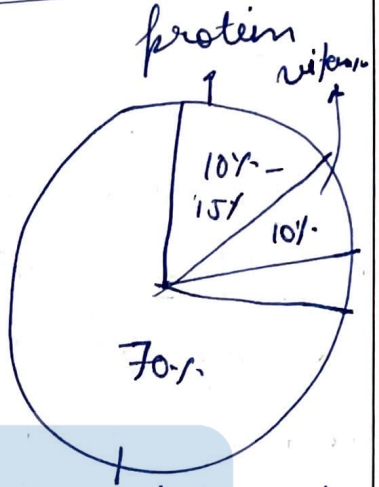


Fig 1

(ii) Gluten - free - good for gluten - intolerant person

(iii) Fibre rich → helful for constipation & the liver problem etc.

iv) Affordable - in PDS shops they can be distributed.

v) Suitable for the gut bacterias of Indian population especially

CHALLENGES → poor yield
→ poor irrigation cover
→ less research in seeds
→ grown in marginalised region
→ called as poor man's food.

To promote millet demand govt need to provide higher MSP & procurement under ~~PM-K~~ PDS

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 ka aim to ensure 54 litre water for each individual per day through resource augmentation & community participation

JJM
- → outcome orientation
- → Public private participation
- → use of technology to filter water
- → 5 tier institutional mechanism
- → urban & rural components.

SIGNIFICANCE OF JJM

(i) Targeted approach - Target of 55 litre per capita.

ii) Bottom up approach - Village Sanitation & water committees will prepare the plan → consolidation at the higher level

iii) community participation
↳ 10% money will be contributed

Candidates must not write on this margin

by the community

iv) ~~Lack~~ Role of women led SHG in operationalising the water infrastructure

v) In JJM (U) → outcome based funding in three tranches 20%, 40%, 40%.

IMPEDIMENTS -

(i) Lack of resource devolution

(ii) Poor convergence with the AMRUT, Swatch Bharat mission.

(iii) Rising water crises due to the climate change, disasters.

(iv) Poor mapping of the water stressed areas.

v) Lack of capacity in people to participate.

WAY FORWARD
- → Use tech as desalinisation.
- → Promote circular economy of water (Mihir Sen committee)
- → Resource augmentation - as rain use of wetland

Candidates mus
write on this m

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 system means storing the energy produced from sources like wind energy, solar energy to ~~use~~ it reduce the intermittency of power supply.

APPLICATIONS -

(i) In solar / wind plants to supply energy when sun is not shining & wind is not blowing.

ii) In nuclear power plants to carry out operation of plants like renewing the nuclear fuel supply.

iii) In e-vehicles - to swap the battery

iv) Decentralised energy supply - offgrid power supply in far flung areas

Candidates must not write on this margin

IT CAN REVOLUTIONISE ENERGY PROGRAM of INDIA IN FOLLOWING WAYS :-

i) Round the clock power supply

ii) Promoting e-mobility - targets of FAME etc can be met

iii) Achieving power security - 24X7 & diversifying sources of the power supply

iv) Meet the Panchamrit target - 50% energy from renewable sources

v) Reduce oil import dependency - currently 86% of oil is imported

vi)

CHALLENGES → Unavailability of rare metals as lithium

→ Disposal of battery - env. hazard.

→ Lack of advanced technology

Govt need to ramp up battery production through subsidy & cheap capital.

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 is human space mission of India which aim to send the 3 astraunts for 5-7 days in Low Earth orbit.

DEVELOPMENTS -

(i) Indian human space flight mission started in 2008.

(ii) Human space mission committee constituted - to implement and monitor the mission.

(iii) International cooperation (with the France, Russia for the astraunt training

(iv) Technology as Reusable Launch Vehicle and Abort test.

CHALLENGES

(i) Lack of technology as the creation of generative environment in the capsule, space reentry etc

Candidates must not write on this margin

ii) Capital intensive - Rs 7000 crores needed.

iii) Poor international cooperation with china due to geopolitics.

iv) Need of very strong launch vehicle

v) Poor domestic capacity for the astronaut training.

E) BENEFITS FOR SOCIETY -

a) Inspire young generation for the scientific research.

b) Promote scientific temper in the society.

c) Employment generation in the backend.

d) International prestige

e) Spill over of the research carried
↳ eg in the aeronautics - faster & cheaper, health research on the astronauts.

Govt need to promote private sector participation.

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 produced from the renewable sources such as the wind energy can reduce carbon emission & help India achieve Panchamrit.

Green hydrogen mission
- SIGHT component to catalyse the production of green hydrogen
- promote research & development in niche areas (STEP)
- demonstration in the areas of long haulage traffic etc.

Green hydrogen can help in dealing with climate change & pollution -

(i) Reduced carbon footprint - Hydrogen mission aim to reduce GHG emission by 50 mmt

ii) clean fuel - minimum emission of particulate matter, CO_2 etc.

iii) High calorific value

Candidates must not write on this margin

iv) Green hydrogen can be produced from the waste material.

v) Less reliance on battery - whose disposal is harmful for environment

vi) Blending with CNG is possible
↳ H-CNG - flexi vehicles.

However challenges persists -

(i) Energy intensive production of the hydrogen.

ii) Currently 75% hydrogen is produced from gas → carbon emission.

iii) Modifications of vehicle engines is required

iv) Regulatory tussle between → MoNRE
→ PESO
↳ MoRT&H

Way forward → inter-ministerial coordination
→ international cooperation
↳ robust supply chain as highly inflammable fuel

To produce 5 mmT H_2, & create 6 lakh jobs, govt need to

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 Joshimath has subsided due to the extraction of ground water by the Taporan ~~thermal~~ plant.

Reasons for Joshimath subsidence
- Taporan project
- Unsustainble growth of habitation
- Deforestation
- Joshimath is built on the sedimentary rocks.

LESSONS FOR DISASTER MANAGEMENT

(1) Mitigation
- Mapping & Zoning of the areas before taking up development projects
- Topographic surveys
- Afforestation & watershed management.
- Mock drills and capacity building of people.

Candidates must not write on this margin

ii) Adaptation

- Retrofitting of buildings
- Ready evacuation plans
- Insurance policies to compensate for loss
- Relief measures like adequate food, sanitation with inter-ministerial coordination.

ENVIRONMENTAL CONSERVATION LESSONS

i) Declare maximum region as eco-sensetive region (Kasturirangan comm.)

ii) Decentralised, small projects like check dams over large projects

iii) Sustainable mining practices over dynamite bombing mining

iv) Poke in local community for the joint forest management etc.

v) Regular assessment on impact on carrying capacity of environment

After 50 years of chipko movement, great need to reconsider once again current model of development

"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 voice for Khalistan was raised by separatist groups in Punjab led by Amrit-pal Singh.

Reasons for continous demand of Khalistan -

(i) Politicisation of issue
- (e.g.) separatists got political patronage from political parties.

(ii) International support
- (e.g.) From Canada, Britain - Sikh diaspora.

iii) Economic stagnation & unemployment in Punjab - woo the youths.

iv) Linkage with the organised crime
- (e.g.) drug traffickers, gun mafia, ISI of Pakistan -

v) Poor law enforcement
- (e.g.) inability to catch Amritpal

Candidates must not write on this margin

for long.

vi) Role of media
& songs eulogise gun culture & the violence.

→ Threat to the territorial integrity

Consequences → Spill-over effect in the other states → Naga area

→ Criminalisation of politics

→ Hamper international relation

MEASURES NEEDED :-

(i) Improve intel network - domestically (RAW, IB & with INTERPOL

ii) Extradition of Khalistani from the Canada etc

iii) create strong borders - to prevent the escape of criminals.

iv) Code of conduct for the political parties

v) Regulate the social media

Candidates write on thi

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

Recently Chief of Defense Staff has proposed to introduce the drone threats into the security doctrines of India.

ANONYMITY OF DRONES

(i) Difficult to track the origin of drones.

(ii) Easy to import drones & use them

(iii) Drones can bypass the radars - as they fly low.

iv) Compact size and can deliver the lethal weapons. Eg - India - Pak border

v) Difficult to ensure the accountability of use of drones

↳ as not manned by anyone

EASE OF DRONE OPERATION

(i) Donot require specialised training

Candidates must not write on this margin

ii) can be used by terror groups to deliver weapon etc

iii) Easy to recon and for the intelligence gathering.

iv) Use of AI, ML has made drone operation autonomous

v) Swarm system of drones.

WAY FORWARD

a) Technological upgradation - to detect & destroy drones. Eg anti-drone guns of navy.

b) Integrate it in the military doctrine

c) Develop offensive capability to use drone for precise attacks against terror camps. Eg LeT camps.

d) Regulate drone use through international treaty on line of the Wassenaar agreement etc

Ex. Ukraine war has shown how drones are future of warfare landscape

Candidates write on this

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 has been contested by the state govts. Bill has now been sent to parliamentary committees for the detailed discussion.

ADVANTAGES

(1) for consumers.

(i) Open access - it will increase competition among discom & reduce tariff

(ii) Responsibility of → assured supply
discoms → penalty if standard not adhered.

(iii) Net metering & smart metering →
$

(2) for DISCOMs

(i) Entry of private DISCOMs → greater efficiency & market.

(ii) License for distribution is more

Candidates must not write on this margin

than one states

iii) Contract enforcement related to PPA → better grievance redressal

iv) Payment security by DISCOMs to power producer - build trust among them

3 FOR environment -

- Mandatory Renewable purchase obligation
- Govt of India can set a minimum limit of RPO - mandatory to adhere.

SHORTCOMINGS -

(i) Federal issue - electricity in the concurrent list & States were not consulted

ii) Electricity tariff may not decrease because 80% of cost is for the power procurement

iii) Centralisation - Govt of India will appoint SERC chairperson

iv) Threat of privatisation → costly
- monopoly
will cherrypick profitable areas
↓
loss to public DISCOMs.

MEASURES NEEDED :-

a) Public private partnership - to build trust & bring efficiency

b) Constitute "National power DISCOM" to handhold state DISCOM.

c) Launch "Aditya Scheme" to revive state discom & promote private participation

d) Federal equilibrium - enact a 'model law' & let states to modify it to suit their needs.

India's per capita energy consumption will double by 2030. BSES in Delhi is a model which can be replicated in India with suitable changes.

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

Candidates must not write on this margin

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 the statutory body to regulate the share market and ensure transparency, accountability in the share market.

functions of SEBI
- register the share markets, brokers, dealers etc
- regulate credit rating companies
- deal with complaints of the insider trading, monopoly
- carry out investor practices etc programs.

CHALLENGES FACED BY SEBI -

(i) poor regulation - Harshad Mehta scam had involvement of SEBI members.

ii) Unable to avoid malpractices
- Reliance insider trading

iii) ~~Boo~~ Less autonomy

↳ (Eg) perceived govt interference in the selection of ~~boo~~ board members.

iv) Technological obsolete

↳ unable to curb use of AI etc to manipulate market.

v) Functional overlap / confusion

↳ (Eg) with competition commission of India.

vi) Corruption & lack of transparency

vii) Reactive in approach over pro-active governance

↳ (Eg) Sahara Scam - failure of corporate governance

REFORMS NEEDED -

(i) Arms length distance from the govt

↳ (Eg) committee based appointment of chairperson / members.

(ii) Adopt international best practices.

Candidates must not write on this margin

iii) Human resource - vacancies be filled
↳ US Stock exchange regulator has three times more employees (Economic Survey)

iv) Accountability with autonomy
↳ & discussions on reports presented by SEBI.

v) greater public engagement
↳ to boost public confidence in stock market.

vi) Set up separate wing for the research & innovation.

positive contribution → Demutualisation of the stock market
→ carrying on retail investor outreach / awareness
↳ regulate corporate governance like an independent member

To make India attractive destination for FPI, SEBI need to be strengthened and cooperation between SEBI, RBI, PFRDA be increased

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 in India contribute to 46% employment, 18% of GDP and 14% of exports. Agriculture is necessary for food security & the agriculture based industry

constraints in agri development →
- Productivity / yield is 50% of china.
- Irrigation coverage is only 48%.
- 60% sown area is of low value cereals
- marketing bottleneck as low MSP, middlemen etc.

IN THIS CONTEXT ROLE OF TECHNOLOGY:-

(i) Increasing the yield
- Bt cotton has doubled the yield.

ii) Tackling disguised unemployment
- custom hiring centres based

Candidates must not write on this margin

jobs -

iii) Removing marketing bottlenecks

(Eg) Coffee board of India started the blockchain for marketing to remove middlemen.

iv) Precise irrigation

(Eg) drip irrigation increased the efficiency to 80% vs canal - 40%.

v) Effective nutrient management

(Eg) nano urea has doubled the efficiency.

vi) Easy to disburse loan or insurance

(Eg) drones based crop cutting exp. eriments

vii) Improve the profitability

(Eg) nano-emulsion in the food processing industry improve the sanitation standard.

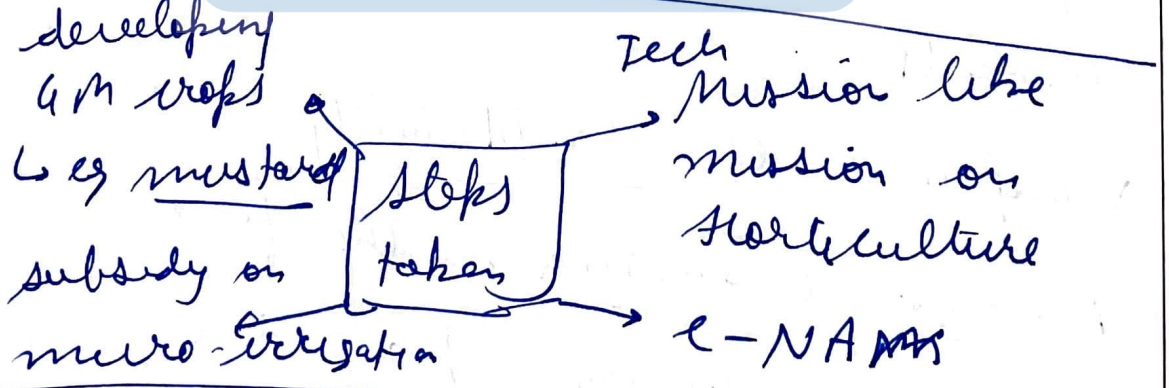
viii) Increase exports - use of big data to discover the possible markets

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ix) Resilience to climate change
↳ eg heat tolerant wheat variety

x) Use of DBT to send money over subsidy which has huge leakage
(Shanta Kumar committee

CHALLENGES → 1.08 ha is per capita land holding - disincentivise the technological adoption
→ only 0.6% of agri GDP is spent on agri research.
→ only 30% households get the extention services



To effectively utilise the technology farmers be organised in FPO and for women & tribal separate machinery be developed

Q.14 पर्यावरण एवं प्राकृतिक संसाधनों पर सिंचाई के प्रभाव का मूल्यांकन कीजिए, और कृषि में सिंचाई पद्धतियों की सततता 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

Candidates must not write on this margin

India's 48% agricultural area is under irrigation. Ashok Dalwai committee has suggested to add 3-5 mha of land under irrigation to double the farmer's income.

IMPACT ON IRRIGATION ON ENVIRONMENT / NATURAL RESOURCES

i) Soil degradation

(a) due to excess irrigation after Indira Gandhi canal in Rajasthan.

ii) Ground water depletion

(a) Haryana has 40% of water blocks overexploited.

iii) Destruction of native species

(a) dry desert areas are coming under irrigation → alien species introduced.

iv) Excess irrigation in rice → release of methane.

v) Poor efficiency - canal has 40% water use efficiency.

vi) River interlinking to increase irrigation coverage has reduced e-flow norms of rivers.

MEASURES TO ENSURE SUSTAINABILITY

(i) Participatory water management
- (a) Water User associations (Mihir Sen committee)

(ii) Crops aligned to local climatic zones
- (a) pulses, millets over sugarcane

iii) Precise irrigation → use of GIS to monitor water demand
- → Sprinkler & drip irrigation

iv) Practice of Zero budget natural farming → Zero tillage
- → mulching to reduce water demand

v) Innovative practices such as System of rice intensification & direct seeded rice

Candidates must not write on this margin

v) Develop drought resistant varieties

vi) Reinvigorate traditional practices such as → bundh system
→ baoris in Rajasthan.

MEASURES FOR EQUITY -

(i) water pricing (2nd ARC) to convey the value of water
↓
use revenue to generate sources in water deficit areas

ii) Participatory management → water audit by PRIs.

iii) Extend irrigation coverage in the North-East & East India.

iv) Use of practices like Kabatya liming system in Royalseema region.

v) Use of GIS to monitor demand & supply

vi) River interlinking (ILR) Ken-Betwa project

Steps like National Irrigation fund, PMKSY need to be implemented with cooperation of

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

India is today a responsible nuclear state and using nuclear tech for the peaceful purpose due to vision of Homi Bhabha. Sarabhai led the Indian ISRO from carrying rocket on cycle to Chandrayan 3.

CONTRIBUTION OF BHABHA IN ATOMIC ENERGY

(i) Leadership - He headed India's nuclear program through Atomic Energy commission.

ii) Vision - Bhabha gave concept of three stage nuclear program

↳ 1st stage →
↓
2nd Stage - Pressurised heavy water reactor (imported)
↓
3rd Stage → Thorium based nuclear plants - India's rich reserves of

Candidates must not write on this margin

thorium can be used to achieve self reliance.

iii) He also advised to separate civil & military nuclear plants → boosted confidence in India & India imported nuclear fuel & tech

iv) Institution builder
↳ TIFR was established by him
↳ TIFR provided valuable research inputs in nuclear program.

v) Research → electron-positron scattering (Bhabha scattering) contributed in increasing → knowledge of atomic energy
→ international scientific cooperation

ROLE OF VIKRAM SARABHAI -

(i) Father of Indian Space program
ii) Founded Indian National committee for space, later renamed as ISRO

iii) charted out the various phases of space program → Small launch vehicle → PSLV → GSLV.

iv) Set up → Physical research lab
→ Electronic corporation of India

↓↓

valuable research inputs in space science

v) carried out research on cosmic rays & how are they effected by sun, atmosphere, magnetism.

vi) Headed Atomic energy commission after Bhabha

↳ development of nuclear plants

Recent "Rocket boys" series has highlighted role of Bhabha & Sarabhai in laying the strong foundation of India.

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

Candidates must not write on this margin

Generative AI is a type of AI which can produce or generate the content like texts, images, videos etc. Recently are GPT, of Google bard.

Features of generative AI
- based on machine learning
- Trained on large amount of data
- based on advanced generative models such as Generative Adverserial network
- Wide application in the health, education, economy

Generative AI can push innovation:-

i) Software development - faster, cheaper & more accurate.

ii) Innovative marketing models
↳ after analysing online demands etc

iii) Health care advancements
↳ precise medical solutions, predictive
↳ preventive health care

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iv) Innovative education
↳ culture specific content generation in vernacular language
↳ customised study material for personalised learning experience

v) Security solutions
↳ finding bug in the encrypted communication

vi) Revolutionising art & literature
↳ eg → writing poems, novels, painting

vii) Precise economic interventions
↳ eg Generative AI can analyse tax filing & expose tax evasions.

HOWEVER SOCIETAL IMPLICATIONS CAN BE THERE -

(i) Rise in inequality
↳ due to digital divide gap - 57% in India

ii) Unemployment - even at the white collar jobs - threat to 40 million jobs

iii) Deep fake generation → can lead

Candidates must not write on this margin

to communal tension, defamation etc

iv) Fear of 'super-intelligence'
↳ Elon Musk warn about pending 'intelligence explosion'.

v) Threat to privacy - as AI can generate fingerprint, iris pattern etc

vi) No overarching law to control development, deployment and export of generative AI.

Way forward →
- Constitute "Generative AI ethics office" as by UK
- Democratise access to AI → broadband & mobile access
- Upskill & reskill human resources
- International cooperation

Generative AI recently reconstructed the renaissance era painting but this is two edged sword which need precise regulation

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 in Sharm Al Sheikh summit to conserve mangrove as 40% of world's mangrove are facing severe degradation.

PURPOSE OF MANGROVE ALLIANCE FOR CLIMATE -

(i) Tropical countries want to conserve mangrove ecosystem

(ii) Cooperation - by sharing the best conservation practices
   - Eg West Bengal model -

(iii) Promote wise use for the sustainable growth
   - Eg fishery in mangrove

(iv) Holistic approach of conservation

(v) Community participation in the

Candidates must not write on this margin

conservation

↳ eg cultural model of conservation

vi) Promote research on the biodiversity of mangrove

vii) Equitable distribution of the benefit arising from use of mangrove

viii) Promoting conservation as a bio-shield against storm, cyclone.

IMPORTANCE OF MANGROVE IN MAINTAINING COASTAL ECOLOGY-

i) Habitat for rare species

↳ eg Andaman mangroves has vast indigenous species.

ii) Act as filter of sediments & heavy metals

↳ purify water

iii) Stop coastal erosion during cyclonic storms.

iv) Carbon sequestration ability of the mangrove is highest of all ecosystems

v) Apex commuller / species - other species survival depend on mangrove.

vi) check the ingression of sea water toward land
↳ contain salinisation of ground-water

vii) Sustainable source income for locals → cultural value too,

Threats to mangroves
→ Destruction for land reclamation
→ contaminated water is released eg - Krishna Delta
↳ Severe storms due to climate change

Research for knowing niche requirement

Way forward
→ Sustainable harnessing of resources
→ Involve local community
Afforestation

- first line of defense against the storms. Mangrove are the to stop land degradation (Wetlands) their conservation is needed

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

Candidates must not write on this margin

India loses 2% of GDP every year due to disasters. CDRI aim to build resilient & robust infrastructure to reduce loss of life & property in line with Sendai framework.

→ Global cooperation on robust infrastructure

CDRI → research & tech. transfer

→ retrofitting critical infrast

→ Innovative financial models

CDRI WILL BRING ROBUSTNESS IN DISASTER MANAGEMENT :-

(i) Proactiveness - through retrofitting

↳ (Eg) BIS Standards in n/bridges etc.

ii) Dynamic - adaptive to climate change

↳ (Eg) drains widened to deal with

heavy rains.

iii) Collaborative for the resource mobilisation & understanding risk. Govt / Pvt sector — community

iv) Global cooperation for the research & tech transfer
↳ in line of common but differentiated responsibility

v) Leadership of India

vi) At crossroad of Paris agreement & Sendai framework.

Current strategy to tackle disasters in India
- Reactive or fire fighting
- Hierarchical, bureaucratic exclusive of civil society
- Fragmented - no inter-ministerial & federal cooperation
- Not mainstreamed in public policy making

Candidates must not write on this margin

~~UA~~NEW STRATEY REQUIRED -

1 Involve community → policy making
is → risk understand
→ resource mobilisation

2. Proactiveness → use AI to predict flood etc
↓ → remove ~~leaf~~ fuel to stop forest fire
retrofit buildings

3. Cooperation → various ministeries
↓ → govt, media, NGO, community
centre & state

4. International cooperation & adopt best practices
↳ (E) NEED dam of Europe to stop Sea rise.

WEF Global risk report said disasters are greatest risks to economic growth. To ensure sustainable growth disaster management need to be streamlined in policy makeup.

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

Recent Cybersecurity Risk Index has put India at — position. Every year India loses $5 billion due to cyber~~sec~~ attacks

cyber attacks in India
- Kudankulam plant (nuclear) attacked
- Power grid in Mumbai was allegedly attacked
- 50% corporations don't report cyber attacks

KEY FACTORS FOR INCREASING CYBER ATTACKS :-

(i) Developing technology
- Eg USA could attack Iran nuclear facility through Stuxnet

ii) Cyber attacks as a means of hybrid war
- Eg alleged Chinese attacks

Candidates must not write on this margin

iii) Dependence on imported gadgets
↳ (Eg) India import 90% IC from china.

iv) Use of unpaid & unlicensed software

v) Corporations dont report cyber attacks

vi) Poor coordination among the NCII NCIPC, IIIC etc.

vii) People are not aware about cyber risks = no cyber hygiene.

viii) 5G is more vulnerable to cyber attack during "network switching"

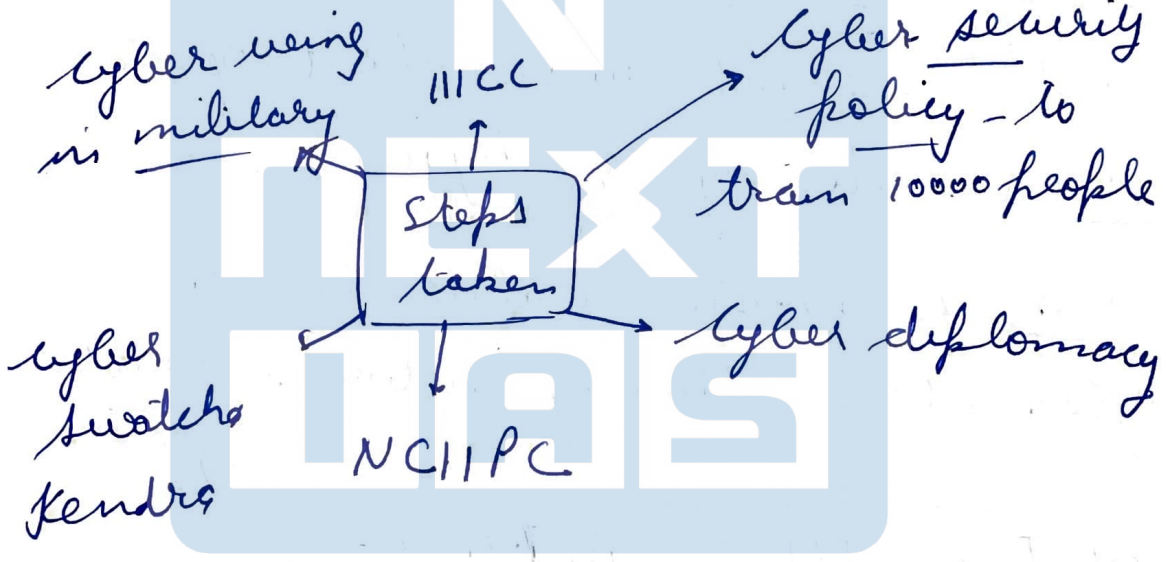
IMPACT of THESE ATTACKS -

(i) Financial loss of $5 bn every year

(ii) Distrust among nations
↳ (Eg) India-Pakistan

iii) Can paralyse critical infrastructure
↳ (Eg) banking, power, transport

iv) Violation of privacy
↳ (Eg) impersonation, deep fake, phising.
v) Disable safe military communication
↳ (Eg) quantum computer can break encrypted communication.
vi) Lead to infodemic & protests
vii) ↳ (Eg) tempering elections in the democracies.



Way forward
- Sign budapest convention
- Domestic manufacturing ability
  - Human resource development
  - Cyber defense abilities

Chandrasekhran committee has suggested to integrate AI, cyber security into military doctrine for effective deterrence

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

Candidates must not write on this margin

India has 15200 km terrestorial border & 7516 km coastal / maritime bordll Various agencies like army, para-military forces, intel agencies & police are involved in the security of these borders.

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current issues in security forces
- Overlap in jurisdiction - BSF & army
- poor coordination with local police,
- diversion of forces for the naxalite region
- disparity in pay, service condition etc.

COOPERATION CAN BE INCREASED IN FOLLOWING WAYS :-

(i) Central authority be constituted
- National maritime authority for cooperation between
  - navy
  - police
  - coast guard

Candidates must not write on this margin

ii) Use of office of chief of defense staff
↳ cooperation in training, doctrine, procurement, operation,

iii) Adopting the integrated theatre command approach
↳ (a) Cyber security command or special forces (Naresh Chandra committee)

iv) Enact a central law on the security - delineating the responsibility of all forces -

v) Security grid through cooperation between local people, intel, police, forces etc (committee)

vi) Adopt China's principle of "one border, one force" principle

vii) Promote the capacity building of forces to deal with the modern crimes → crypto crimes
→ dark web etc

viii) A law to back intel agencies & promote cooperation

Candidates must not write on this margin

(i) Friction among forces

+

Limited defense - military complex

CHALLENGES → Limited civilian - military cooperation

PACED

↳ Intel agencies act in silos

---

multi-disciplinary intel experts

↑

National Maritime authority → Steps taken → Chiefs of defense staff

↓

Blue navy developed

capacity building of CAIF, CRPF

To ensure net security from the conventional & non-conventional security threats India need to bring all security forces on one platform.