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NEXT IAS (Head Office) : 27-B, Pusa Road, Metro Pillar no. 118, Near Karol Bagh Metro, New Delhi-110060
Bhopal Centre: Plot No. 46, ZONE-2, M.P. Nagar, Bhopal-462011
Ph: 8081300200, 8827664612 | E-mail : mts@nextias.com | **Web:** www.nextias.com

(To be filled by candidate)

Name of Candidate : SHOIAB

Roll No. : PTTP221500

Registration Number : P **Date of Examination :**

Exam Centre : Old Rajinder Nagar ☑ Bhopal ☐ Online ☐

Test - 3 **Code : TC073**

MTS IGP Batch 2023

GENERAL INSTRUCTIONS

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

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

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

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

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SUBJECT/PAPER
GENERAL STUDIES

Invigilator's Sign. : .....

(For filling by Examiners only)

Evaluator Code :

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

Signature

MACRO COMMENTS

IMPORTANT INSTRUCTIONS

CANDIDATES SHOULD READ THE UNDERMENTIONED INSTRUCTIONS CAREFULLY. VIOLATION OF ANY OF THE INSTRUCTIONS MAY LEAD TO PENALTY.

DONT'S

1. Do not write your name or registration no. anywhere inside this Question-cum-Answer Booklet.
2. Do not write anything other than the actual answers to the questions anywhere inside your QCA Booklet.
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1. Read the Instructions on the cover page and strictly follow them.
2. Write your registration number and other particulars, in the space provided on the cover of QCA Booklet.
3. Write legibly and neatly. Do not write in bad/illegible handwritings.
4. For rough notes or calculation, the last two blank pages of this booklet should be used. The rough notes should be crossed through afterwards.
5. If you wish to cancel any work, draw your pen through it or write "Cancelled" across it, otherwise it may be evaluated.
6. Handover your QCA Booklet personally to the invigilator before leaving the examination hall.

Candidates must not write on this margin

Q.1 अप्रत्याशित कर (विंडफॉल टैक्स) से आप क्या समझते हैं? क्या आपको लगता है कि अप्रत्याशित करों से संपदा का प्रभावी ढंग से पुनर्वितरण हो सकता है और अधिक आर्थिक समानता को बढ़ावा मिल सकता है?

(150 शब्दों में उत्तर दीजिए) 10 अंक

What do you understand by Windfall tax? Do you think that windfall taxes can effectively redistribute wealth and promote greater economic equality?

(Answer in 150 words) 10 Marks

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

↳ 2 factors → Profit more than expected
↳ Unregulated or not due to company's action.

↳ e.g. Govt. recently applied windfall Tax on oil companies during increase of price from Russia.

Windfall Tax to Redistribute wealth

↳ (1) Helps to collect extra income from the company.

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

Candidates must not write on this margin

(3) Taxing the extra income from company due to unforseen events.

Promoting Greater Economic Equality

(1) Used for funding welfare schemes
- e.g. - PM Garib Kalyan Yojana.
- e.g. - Subsidies on LPG.

(2) Can be used to promote Inter-generational equity
- e.g. - Funding shift to Green energy.

(3) Use to reduce profits of large companies
- e.g. Such events can lead to large profits of companies like oil Refining PSUs.

(4) Promote welfare through Unforseen events & Revive Economy

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

Candidates must not write on this margin

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

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

Monetary Policy Committee - constituted by the government to set the inflation targeting. [eg. current target 4 ± 2%].
- 3 members from RBI + 3 from government.

Successes of MPC

(1) Has kept steady rate of Inflation for most part.
- Target 6%, maximum inflation was within limit (6-7%) even during COVID-19.

(2) Inflation Targeting fee from political fears
- set by experts according to market fears.

(3) MPC measures like increase of 250 basic points helped to tackle the capital outflow

Candidates must not write on this margin

(4) It keeps the interest rate steady, controlling Inflation. Eg. during Global monetary Tightening

Challenges to MPCs

(1) Not able to keep Inflation within Target
   - e.g. Breached 6-1. max limit.

(2) Skyrocketing food Inflation
   - Doesn't target food Inflation separately.
   - affects the poor most.

(3) MPC can't create target according to market forces.
   - → 4 ± d.t. fixed by government.

(4) Political Interference — No qualifications for 3 members nominated.

⇒ MPC inflation targeting played crucial role during COVID-19 recovery and Russia-Ukraine war, been again in global slowdown and Monetary Tightening

Candidates must not write on this margin

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

Currently India produces > 50 mn tonn of millets [sunny road]. Millet is considered as coarse grain which has various Nutritional and climatic benefits.

Millets for Sustainable Agriculture

(1) Good for water stress area & Drought area
e.g. - saves water compared to wheat & rice.

(2) Use less fertilizers and pesticides

(3) Millets doesn't require much external input [Cost effective crop].

(4) Millet has higher productivity per unit area & fulfilling Human Nutrition's Target

(5) Climate Resilient

Candidates must not write on this margin

Millets for Nutritional Security

(1) Good for Nutritional Requirement
- Zero Gluten i.e. Gluten free
- Healthy & easy to digest
- Protein & fibrous.

(2) Good for people suffering from Diseases like heart attack, kidney issue.

(3) Good for ~~both~~ Balanced & Nutritious Diet
- e.g. Sustainable living & Diversify in consumption.

(4) Can be used to ensure world food demand [In Russia-Ukraine issue].
- food experts → Income of farmers → Twin Nutritional security factor.

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

Candidates must not write on this margin

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

Significance & Potential to end regional disparity

(1) Aims to provide 8cr more connections, 11cr more already achieved.

(2) It focuses on areas with water scarcity i.e. Rajasthan and Gujarat

(3) More funding to drought prone areas

(4) Some areas have very less water connection

e.g. Barmer → earlier <30%.
→ Now >50% connections.

Candidates must not write on this margin

Underlying Issues with Jal Jeevan Mission

(1) most important is Regional Disparity
- lack of Centre-State coordination
  - e.g. Rajasthan fund not utilized.
- some areas not really focused.
  - e.g. – Bihar & Mumbai in MP.

(2) Water availability – connections are there but supply of water not ensured.
- e.g. - Nagaur District.

(3) Allegedly ambitious target
- 8 cr new connections within 2 years.

(4) doesn't include holistic water Management
- should have
  - Rainwater
  - Groundwater recharge (Bhujal Yojana)
  - water conservation.

→ water is essential part of life and achieving SDG 6, therefore economic value of water can be considered

Candidates must not write on this margin

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

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

Battery Energy Storage Systems — They are large systems which can be used to charge batteries of electric vehicles [Budget say 3000 cr for this]

features

- store large amount of energy.
- multiple charging at an interval

Applications of BESS

(1) Primarily used for electric vehicles
   - achieve targets of FAME-2 to decrease charging infrastructure

(2) Can be used to store high amount of Renewable energy.

(3) will make grid connectivity possible for continuous supply of renewable energy.

Candidates must not write on this margin

How it can Revolutionize Energy program

(1) It can help achieve NDC target of 50%
- currently >41% Renewable energy.

(2) Revolutionize electric vehicle sale
- target of 30% share in automobiles by 2030.

(3) can ensure storage of high amount of energy
- sustainable supply of Renewable energy.

(4) Reduce Import of Ready-imports of Batteries
- Fiscal deficit will reduce.

(5) It can revolutionize the energy trade markets

⇒ BIMS program is not only aligns with "Sankalp" but also with a developed India by 2047.

Candidates must not write on this margin

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

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

Gaganyaan Mission → It is the Indian space mission targeting to send humans to space station in lower earth orbits

↳ This will happen in 3 phases.

Developments of Gaganyaan

→ Vyomitra used in first two phases.

→ Reentering in earth atmosphere has been worked.

→ Mk-III fully developed that will carry the passengers.

→ Training of selected Individuals in Russia.

Challenges in Gaganyaan Mission

(1) Reentering into earth atmosphere
- ↳ may later fire like recent SPACE-X incident.
- ↳ very high temperature → crew cabin should be safe.

Candidates must not write on this margin

(2) mark-3 is less reliable, it has been
- tested only few times.
- whole PSLV now tested.

(3) Only two testing before final launch of mission.

Possible Benefits for the Society

(1) Possible future space exploration.

(2) Will interest students to take ~~interest~~ keen interest in space research.
- e.g. earlier Kalpana Chawla.

(3) Will be helpful in finding origin of moon and earth

(4) will benefit from future resource discovery from outer space.

(5) Source of National pride.

⇒ Space exploration is very important and India is keen on developing as a key player in it [Ministry of S&T].

Candidates must not write on this margin

Q.7 "जलवायु परिवर्तन और प्रदूषण से निपटने की हमारी खोज में हरित हाइड्रोजन एक सरल और जादुई समाधान हो सकता है"। भारत के राष्ट्रीय हरित हाइड्रोजन मिशन के आलोक में कथन का आलोचनात्मक विश्लेषण कीजिए।
(150 शब्दों में उत्तर दीजिए) 10 अंक

"Green hydrogen can be the silver bullet in our quest to tackle climate change and pollution". Critically analyze the statement in light of India's National Green Hydrogen mission.
(Answer in 150 words) 10 Marks

Green Hydrogen Mission has been launched with an outlay 19,744 Cr in this year's budget. The key focus is to develop hydrogen as fuel for future.

- Targets
  - 125 GW production of energy.
  - 6 lakh jobs.
  - 5 MMT production of hydrogen.

Importance in Tackling climate change

(1) Hydrogen is clean fuel
  - Doesn't release any pollutants

(2) Hydrogen is a fuel carrier
  - green Hydrogen → fuel gets energy from Renewable energy
  - easy transport of Renewable energy.

Candidates must not write on this margin

(3) It aims to reduce somnt of CO_2 emissions as part of its objectives.

(4) It focus on Research & Development & Pilot projects with ~~with~~ reduce pollution

(5) It aims to reduce the import of fossil fuel worth ₹ 2 lakh cr.

But there are certain apprehensions

(1) Production of electrolysers very nascent stage.

(2) Uses large amount of water (e.g. - 1 tonn = 900 lt of water.)

(3) Production is very costly now.
- current price - Rs 600-800 (1 tonn)
- needed - Rs 1500-250 (1 tonn).

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

Candidates must not write on this margin

Q.8 हाल ही में जोशीमठ, उत्तराखंड में आई आपदा के आलोक में, हिमालय क्षेत्र में आपदा प्रबंधन और पर्यावरण संरक्षण के लिए मुख्य सबक क्या हैं? (150 शब्दों में उत्तर दीजिए) 10 अंक

What are the key lessons for disaster management and environmental conservation in the Himalayan region, in light of the recent disaster in Joshimath, Uttarakhand? (Answer in 150 words) 10 Marks

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

Lessons for Disaster Management

(1) lack of preparedness even when it was in zone-V in terms of vulnerability.

(2) Even after maps appeared there was no allocation.

(3) Community participation was largely missing and free jeep action was there for rehabilitation.

(4) Land-subsidence can be considered as seperate disaster under NDMA act.

Candidates must not write on this margin

Lessons for Environment Conservation

1. Planning should be based on Environment Impact Assessment (EIA).
2. Expert committee should be taken into account for Development.
   - e.g. Mehta committee recommendations ignored.
3. Limited Capability of vulnerable areas.
   - should promote "sustainable Tourism"
4. This is an example of unregulated ~~urban~~ development of residential housing.
5. NDMA Plan 2016 – Structural & Non-Structural means should be applied to protect such Disasters.

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

Candidates must not write on this margin

Q.9 "पंजाब में हालिया कट्टरपंथी रुझानों से पता चलता है कि खालिस्तान का मुद्दा अभी भी उबल रहा है।" हालिया घटनाक्रम के संबंध में कथन पर चर्चा कीजिए और इससे निपटने के उपाय सुझाएँ।

(150 शब्दों में उत्तर दीजिए) 10 अंक

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

(Answer in 150 words) 10 Marks

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

↳ It got momentum before ~~after~~ operation blue star in 1980s

Recent Trends

(1) → New type demand of Khalistan with new leadership.

↳ e.g. Amritpal Singh Tofan and Amritpal Singh.

(2) Support from outside

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

Candidates must not write on this margin

(3) Drugs trade & Terror from across the Border.

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

Measures to Handle Such Tendencies

(1) Counter through Security measures

↳ Using laws like UAPA, NSA against fringe elements.

(2) Counter through Intelligence

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

(3) Foreign Diplomacy

↳ counter any protests through Negotiation. [e.g. India warned against Anti-India protests]

(4) Counter through own Diaspora and development of Punjab.

⇒ Security of India is paramount to Security; Internal & external.

Candidates must not write on this margin

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 unmanned aerial vehicles used for different purposes.

Anonymity & Ease of operation

- Small size
- difficult to detect with satellite [moving nature]
- misinterpreted as birds
- Drone counter-measures at nascent stage.

Challenges to Border Security

(1) Border Smuggling
- e.g. drugs captured at Punjab Border

(2) Arms trade Illegally
- e.g. - Rajasthan Police captured at Barmer.

(3) Terror attacks → Drones can be used to plan state sponsored & Non-State terror attacks.

Candidates must not write on this margin

(4) Threat to security
↳ extra edge to military Intelligence.

Suggestions to tackle the drone problem

(1) Drone Regulations
↳ Rules released by Ministry of civil aviation [Red, Yellow & green zone classification].

(2) No Fly policy without Registration
↳ Drones should be registered along with pilots.

(3) Anti-Drone capabilities should be explored
↳ → laser
Net
→ Missiles.

(4) Develop own Drone capabilities for counter-measures.

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

Candidates must not write on this margin

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

Electricity Amendment Bill, 2022 brings several advantages for consumers, DISCOMs as well as the environment. Elaborate. Also, list out its shortcomings and suggest some measures to overcome them. (Answer in 250 words) 15 Marks

India produces >411 GW of total energy out of which ≥ 168 GW is from renewable sources [MNRE March 2023].

→ Electricity Amendment Bill was brought has various advantages —

For Consumers

(1) Freedom to choose electricity supplier
└ e.g. from DISCOMs choose any supplier.

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

(3) It will give users to make Environment friendly choices.

(4) Consumers also become green supply

Candidates must not write on this margin

For DISCOMS

→ It reduce the compliance Burden by giving options for RPO. [Renewable Purchase obligations]

→ Reduce consumption — prefer metered connection

- timely assessment of supply & payment.
- reduce theft of electricity

→ Reduce them of their high debts.

For Environment — Increase supply of Renewable energy.

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

But there are some shortcomings

— Didn't address the financial debt situation of Discoms.
[debt owed to DISCOMS].

Candidates must not write on this margin

→ allegations of violation of federal structure | Electricity is federal list of govt.

→ Electricity supplies will have ultimate say in prices
  └ for high prices for consumers | as it is a market driven

→ also various subsidies will subsume | the form subsidies.

Measures to Overcome
  └ proper consultation with states [Federal structure].
  └ consult various discoms.
  └ Find solutions for sustainability of DISCOMS eg. UDAY bonds.
  └ Transparency in supply of electricity in new system

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

Candidates must not write on this margin

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 functions as the principle market regulator in Indian Investment Capital Market.

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

Role of SEBI as Market Regulator

→ Set Standards for Investors, Borrowers, Issues in market.

→ It sets up funds for welfare and Information of Investors

↳ e.g. Investor Protection Fund.

↳ Awareness campaigns.

Candidates must not write on this margin

→ It regulates the functioning of market platforms & stock exchanges
  └ e.g. guidelines for stock exchanges like BSE, ISE.

→ It regulates the Malpractices and Price setting irregularities
  └ e.g. Rules for setting values of stocks in market.

→ In any case of fraud with investors if look into as primary investigator.

Challenges faced by SEBI

→ Malpractices like Insider trading, etc.

→ Using AI and other Technology for stock manipulation.

→ Frauds in Market Manipulation
  └ e.g. Harshad Mehta case
    └ now shutdown of prize falls beyond limit.

Candidates must not write on this margin

→ short selling & other trading practices
  e.g. - Adani-Hindenburg case

Reforms for future

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

→ Record of previous ~~records~~ of corporate frauds debarring from financial market.

→ SEBI can be given power to see annual reports & mortgage terms

→ Consumer related → Investor guide for investing in listing companies
  - suggest education list for investors.
  - based on profile of investors

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

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

Indian agriculture produces 315mn tonns of grains and 330 mn tonns of horticulture crops.

But despite high production there are several issues (Ashok Dalwai Committee highlights)

(1) Low productivity - crop productivity low within country & outside country

→ Rice productivity - China double of India's average.

→ Punjab double of west Bengal's avg.

(2) lack of diversification of crops

→ wheat & Rice production.

(3) Lack of Mechanization

→ India → 45%.

→ USA → 95%.

(4) Lack of storage & Post harvest losses

Candidates must not write on this margin

- (i) lack of godowns
- (ii) lack of Extension services
- (iii) lack of Marketing (Forward & Backward linkages)

(5) lack of sustainable farming
- like Organic, ZBNF, etc.

(6) lack of Income of farmers
- Middlemen Issue
- Centralization of APMCs.
- Large farmer centred.

Role of Technology to solve

- Pre-Planting Issues
  - Crop facilities - Kisan Credit Card
  - Information - Kisan call centre, soil health card.
  - Inputs - Direct benefit transfers.
- During Planting → Drones to survey nature of crops.
  - AI based models to predict crops & weather.
  - Mechanization to help increase productivity.

Candidates must not write on this margin

Post Harvesting

→ National Markets — e-NAM, Agriculture

→ Organizational structures

→ Digitalization of soil.

→ Organisation like FPOs.

→ Storage — Sensors in storage capacity.

→ Mechanized & clean storage.

→ Distribution — cold supply chains

→ smart transportation.

Others — Digitalization — Financial Inclusion, Kisan TV programmes

→ AI — precision farming.

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

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

India has about 50% of cropped area under irrigation. Robust irrigation has resulted in added 315 mm tonn production of grains [Survey 2022].

Impact of Irrigation on Environment-

(1) It has created **positive results**
- (i) more production of crops, plants, trees, etc.
- (ii) less burden on Natural Resources like lakes etc.

(2) **Negative Impacts**

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

(ii) wastage of water in Irrigation
- planned use production [focus on Rich & urban]

(iii) → more agriculture - upland trees & forests.

Candidates must not write on this margin

Impact on Natural Resources

→ Natural resources are destroyed for crop production.

→ Natural resources like water depreciated [large extraction].

→ But large production crops is a positive.

Sustainability & Equity of Irrigation

(i) Precision and efficient use of irrigation
↳ PM Krishi Sinchayi yojana focus on efficient farming.

(ii) Using modern Technology and sprinkler system
- Sprinkler system - for horticulture
- Drip Irrigation - deep rooted crops.

(iii) Using canals & Interlinking
- Using canals ↳ Indira Gandhi Canal
- Interlinking ↳ National inter-link linkage program.

Candidates must not write on this margin

(iv) Focus on surface water instead of ground water.

(v) Focus on Traditional Rainwater Harvesting
- ~~Rainwa~~ Rooftop rainwater.
- Bhungroo System of Gujrat.
- Baoris of Rajasthan.

(vi) Equal distribution among states
- resolve river water disputes (i.e. Tribunals).

(vii) Crop Diversification & Enhance productivity [A. Dalwai committee recommended].

(viii) Implement Organic / ZBNF and millets [instead of RCF]
- esp. in areas like Punjab

⇒ Irrigation through water efficient, need overall architecture with all stakeholders to achieve SDG # 7 & sustainable agriculture in the future

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

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

Contributions of Homi-Jehangir Bhabha

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

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

Candidates must not write on this margin

→ He was also an institute built by for Independent India. (BARC).

→ He started the first phase of Nuclear research in India.

→ He was also involved in various development projects of Govt.

Contribution of Dr. Vikram Sarabhai

— He carry forward the work started by Homi Bhabha.

— He explored ISRO's work in rocket development and satellite launch.

— He is regarded as father of India's space programme".

— He was pivotal to creation of PSLV launch vehicle.

→ He trained the future scientists like Satish Dhawan under him.

Candidates must not write on this margin

→ He commercialised the operation of ISRO.

— He also collaborated with Russian space agency for launch of India's first satellite.

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

In Nuclear program also we have reached 2nd stage & will soon with 3rd stage of ~~three~~ 3 stage Nuclear Programme"

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

Two models
- Set Data → data feed is fixed → Chat GPT
- Evolving Data set → data set evolves on live feed. e.g. BARD

Potential of Generative AI

(1) It has capabilities to generate innovative Texts, audios & videos.
- e.g. give solutions to problems, questions, etc.

Candidates must not write on this margin

(2) Can Mimic Human like Intelligence.

(3) In different sectors

(a) National security ⌐ predict attacks
                      ⌐ context cyber security.
                      └ context different systems.

(b) Education — produce curriculum for students.
                ⌐ evaluate performance of students.
                └ learning models.

(c) Services to Customers
    ⌐ provide better service delivery based on consumer choices.
    └ produced customized results for service delivery.

(d) It can also help in

- Healthcare diagnosis & Drug development
- Help in New Data Models for growth & development
- Environment solutions.

Candidates must not write on this margin

Challenges posed by Generative AI

(1) **Dilemma of Intelligence**
- Intelligence developed through data, data can be wrong.
  - e.g. - google shutdown of AI chatbot.

(2) **Human Interference** - control of generative AI like **ChatGPT** & **BARD** should be made open.

(3) **Machine Apocalypse** - some thinkers like **Elon Musk** and **Bill gates** have warned against potential threat to humanity.

(4) **Loss of creativity** in humans when work can be created on ChatGPT.
  - e.g. artists, poets, etc.

(5) **Can be used as security weapon** by some actors.

⇒ For the "**Age of AI**" one has to take lead & achieve one of **capabilities** of "Unleashing the **Potential**"

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

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

↳ e.g. - Sundarbans, Bhitarkanika are types of Mangroves.

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

Purpose

(1) Achieve sustainability of Mangroves by 2030 i.e. set targets for 2030.

(2) Sees mangroves from ecological and habitable perspective also

↳ i.e. focuses for sustainable livelihood along with local habitants.

Candidates must not write on this margin

(3) It also focuses on the economical aspect of mangroves
- i.e. Rich source of ~~fish~~ resources like fishes, etc.

(4) Voluntary targets can be set by Individual countries.
- e.g. Bonn Targets on forests.

Importance of Mangroves in Coastal Ecology

(1) Acts as Barrier
- from floods, cyclones, Tsunami.
- e.g. Fani's impact more due destruction of mangroves.

(2) Acts as filter for water
- since streams carry various pollutants if filter them out maintaining ecological validity.

(3) Maintain Biodiversity, as an Ecotone
- it has many biodiversity unique

Candidates must not write on this margin

b of.

(4) livelihood to locals

mangroves offer agriculture & fishing opportunity

Agriculture - Rice cultivation in Kerala (Kuttanad).

Fishing - Sundarbans.

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

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

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

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)

is a disaster related International Initiative by India. It was launched in 2019 by Hon. PM.

How it Brings more Robustness

→ (1) Global Cooperation in Disaster Management
- Thus fulfilling an important objective of Sendai framework.

(2) It focuses on Resilient Infrastructure
- Thus promoting both Adaptation and Mitigation from climate change

(3) Gives India leadership role to represent the problems of Developing countries in climate actions.

Candidates must not write on this margin

(4) It will share best practices of modern Resilient infrastructure with the world.

(5) It is first of its kind platform will gives advice on sustainability of Infrastructure.

(6) Its second such initiative from India after ISA.

Need for New Strategy to tackle Disaster

(1) As global climate change is showing effects.

→ New Issues → extreme weather events
→ concentrated rainfall & droughts

Therefore new ways to tackle such challenges.

(2) Global Issues due to climate
→ Migration (New York Declaration)
→ Inter-state Dispute (Kalapani Dispute).

Candidates must not write on this margin

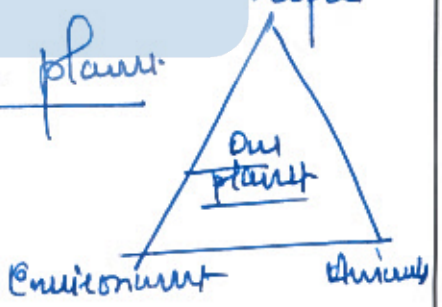
↳ Tuvalu need for International collaboration like IOA & CDRI.

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

(4) Intensity of Disasters has increased
↳ floods each year after 2014.
↳ Kerala floods,
↳ Mumbai floods (recent)
↳ Bangalore floods.

(5) Need to factor in mitigation and adaption
↳ National Disaster Mitigation Fund
↳ Adaptation fund

(6) Need New Holistic 'One planet approach'



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

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

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

↳ e.g. - Ransomeware for 7 continuous days in AIIMS.

Recent Rise → Time saw more than 13000 ransomeware attacks in the last one year.

↳ e.g. ① Attack on Mumbai critical Power Infrastructure during escalation with China.

② Attack by Petya Ransomeware.

Candidates must not write on this margin

③ Attack on Zomato, threatening to steal data of Millions of customers.

④ Attack on Ransomware on Kundankulam Nuclear Plant.

⇒ All these events show attack on critical Infrastructure and Corporations.

Factors Contributing to this threat-

- Digitalization of economy.
  - e.g. 2nd largest Internet user Base.
- Cyber Security capabilities at nascent stage.
  - No single architecture for cybersecurity.
- Cyberspace becoming a tool of Security Threat
  - e.g. – Mumbai Powerplant attack at time of Border Tension with China.
- Lack of awareness of cybersecurity
  - need of training.

Candidates must not write on this margin

Impact of these attacks

① Threat to Personal Data Security
- need data protection laws.

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

③ Threat to Commercial Interests
- Data localization
- Protection of misuse of Data
- Data Mining

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

⑤ misuse of people
- e.g. ATMs attack hacked accounts

⇒ Cyberspace has become part of our world. So there is need for Domestic & International architecture & protocols.

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 has maritime boarder of 7517 km and land boarder of arm 15000 km, hence the challenges are multifaceted.

Issues related to multiple agencies

Terrestial Boarders → different forces for different Boarders.

→ Multiple forces for same boarder
e.g. – Army & BSF [LAPP].

→ Lack of proper demarcation of roles.

Coastal Boarders → overlapping jurisdictions

→ 3 seperate forces for different areas

State Police (Territorial water) | Coast Guard (EEZ) | Navy (Open sea).

Candidates must not write on this margin

Coordination & Coordination of forces

Terrestrial Borders

→ One force, One Border Rule
  - e.g. BSF – only for India - Rajasthan Border.

→ Specific roles for CAPF and Army.

→ Interoperability between army, navy, air force.
  - through Integrated Battle command HQ, IDS, etc.

→ Use of Technology to aid coordination
  - eg. – use CIMBS, BOLD-QIT.

→ Exchange of Information on a single platform.

Maritime Borders

→ clear jurisdiction for different forces.

Candidates must not write on this margin

→ Maritime forces should demarcate eff
  e.g. Piracy should give to Navy.
  Illegal fishing to coast guards.

→ Proper information coordination between different forces.

→ Specific corporation to check infiltration
  e.g. mumbai attacks came through coastal sea.

→ Recent Maritime control centre in Gurgaon is a step in this direction.

⇒ Government has taken various steps according to Shyamlal committee which puts a uniform defence mechanism of Border area.

Candidates must not write on this margin

Space for Rough Work

NEXT IAS