# NEXT IAS

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(To be filled by candidate)

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Roll No. : MT 23 RCAPA 017

Registration Number : ..... Date of Examination : 14/08/23

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.

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

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

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

.....

SUBJECT/PAPER
GENERAL STUDIES

Invigilator's Sign. : .....

[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 | | | |
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| 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.
3. Do not tear off any leaves from your QCA Booklet, if you find any page missing do not fail to notify the supervisor/invigilator.
4. Do not leave behind your QCA Booklet on your table unattended, it should be handed over to the invigilator after conclusion of the exam.

## DO'S

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 is the tax levied when there is sudden increase in the profit of a company in terms of revenue.

e.g Sudden increase in profits of oil companies during Ukraine - Russia Conflict.

⇒ Windfall tax - wealth & greater eco. equality

(1) Companies used public resources to generate their profit and hence the tax is a way of promoting wealth redistribution.

(2) Environmental cost (negative externalities) through windfall tax act as a means to measure GREEN GDP.

Candidates must not write on this margin

(3) Revenue for developing countries through imposition of windfall tax and revenue generated can be used for welfare measures.

(4) Contributes to positive balance of trade and level playing field for other companies as well.

⇒ Challenges

→ basically short-term measure

→ revenue generated may not be used for gainful purposes (populist based)

→ Companies already facing high risk & Imposition of windfall tax adds additional cost (e.g. during Russia - Ukraine war).

Windfall taxes, provided the challenges are addressed, can contribute positively to the economy and have multiplier effect.

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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

The MPC regime was recommended by the Urjit patel Committee to ensure proper monetary policy in the country.

⇒ MPC : Successes

(1) Since its inception, it has done fairly good to contain inflation within the targetted range of 4 ± 2%.

(2) Also uses headline inflation (CPI) which covers both core and non-core food items

(3) Played a big role during COVID pandemic when economy was falling by adopting accomodative monetary policy.

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(4) MPC ensures accountability of RBI when it is unable to control inflation for 3 consecutive quarters.

(5) Provides inflation targetting as core function of MPC & promotes cooperation of RBI & Govt.

⇒ Challenges of MPC

(1) Solely focussing on inflation targetting takes away the other functions of RBI as the monetary policy body.

(2) Target is decided by Centre and MPC has limited say on this matter, which reduces its autonomy.

(3) Lack of consultation of MPC (e.g) during the de-monitisation in 2016.

(4) Failure to control inflation for 3 consecutive quarter recently.

Despite its challenges, MPC gives a platform for various stakeholder to develop a consensus./

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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

With 2023 being declared as International Year of Millet by UN, its significance has gained worldwide.

⇒ Potential of millet - sustainable agri & food security in India :

(1) India produces ≃ 20% of world's millet and is the largest producer, hence has a great prospects.

(2) Requires less irrigation (not water intensive) and hence can promote sustainable agri in India esp. dryland farming.

(3) Farmers - income - India 86% are small & marginal farmer. Millet requires less capital and more resistant to climatic vagaries.

Candidates must not write on this margin

(4) Addresses nutritional security (hidden hunger) as millet are also called SUPER FOOD rich in nutri-cereals.

(5) Contributes to food diversification (Revised estimates foodgrain production is 315 MMT but mainly rice & wheat)

(6) Less technology intensive and hence reduces carbon footprint in agriculture sector.

Challenges
- agri. sector dependence on monsoon (irrigation ~40% only)
- less awareness, hence considered poor family/man's diet
- difficult to prepare millet foods, thus discourage consumption.

Govt. through Shree Anna in Budget 2023-24 has promoted millet production & it has great potential to contribute to SDGs by 2030.

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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. (1) (2) (Answer in 150 words) 10 Marks

Jal Jeevan Mission is a flagship program of Ministry of Jal Shakti to ensure water security in the country.

⇒ Significance of the mission

(1) Promotes water security by ensuring adequate and safe drinking water provided through tap line to every household.

(2) Women-empowerment esp. in rural areas as women do not have to waste their time in searching for water & can devote more time to other productive means.

(3) Addresses water-borne diseases and hence promote health security (both physical & emotional.)

Candidates must not write on this margin

(4) Address regional disparities of drinking water

(e.g) Regions of extreme & harsh climatic conditions of Rajasthan, Ladakh etc.

⇒ Challenges of the Mission

(1) Implementation issue due to lack of coordination between departments & ministries.

(2) Lack of people's participation which hampers realisation of desired objectives.

(3) 55 litres of drinking water still inadequate

(4) Lack of periodic review of the mission

(5) Infrastructural issue hampering tap connections to every household.

(6) Limited timeline (to be achieved by 2024)

Addressing these challenges is key to achieve the desired objectives and also SDG 6 (water) by 2030.

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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 use of high end technology in storing energy in a safe manner.

⇒ **Applications**

↳ Use of the 4th state of matter and atomic particles by incorporating the idea of Bose-Einstein concept.

↳ High density of energy and less self discharge which provides great potential for the energy sector.

↳ Contributes to energy transition of India from fossil to cleaner fuels.

Candidates must not write on this margin

⇒ How it can revolutionize energy program in India

(1) Energy security, in sync with SDG 7 (Energy) by 2030.

(2) Commitment of India to Net Zero Carbon Emission by India as part of its INDC target

(3) Demonstrate India's capability in energy storage system & development of infrastructure for the same.

Challenges → high cost
→ Need R & D investment
→ infrastructural issues for BESS.

The BESS initiative can transform revolutionize the energy program of India.

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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

Gaganyan Mission of ISRO aims to send manned mission to space by 2024.

→ Developments
- → Space exploration by astronauts for 5-7 days
- → demonstrate India's capability in Space field at global level
- → train astronauts to collect vital & crucial information about the Universe.

→ Challenges
- → postponed from earlier objective of 2022 due to COVID.
- → Infrastructural challenges in developing the mission
- → lack of training facilities in India therefore being trained abroad at Russia
- → cosmic radiation high thus pose threat to astronaut's life, Space Debris etc

Candidates must not write on this margin

⇒ Possible benefits for the society

(1) Space tourism - for space enthusiasts and thereby generate revenue.

(2) Technology spin off through the mission can contribute to health, economy etc for the society.

(3) Understanding of space & universe can have multiplier effect on human development.

(e.g) Education, Research & development etc

(4) Demonstrate ISRO's capability which will help sharing of its expertise & knowledge with other countries.

Thus, Gaganyaan Mission has great potential and multiplier effect for the society & humanity as a whole.

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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

With climate change becoming a reality,

Green hydrogen - generation of energy from renewable means has gained significance.

National Green Hydrogen Mission aims to achieve energy security by 2047.

⇒ NGHM - tackling climate change & pollution

(1) Contribute to Net Zero Carbon target of India by 2070, which NGHM will play a crucial role.

(2) Promotes Green Energy as NGHM aim to achieve this through sustainable & renewable means.

Candidates must not write on this margin

(3) Contribute to Energy Security & energy transition (fossil fuel contributes 55% of energy needs at present).

(4) Less carbon footprint due to less emission of toxic pollutants.

Challenges →
- Infrastructure for producing Green Hydrogen still at nascent stage.
- High cost of energy production
- technology intensive hence developing countries are disadvantage.
- Carbon footprint is not nil (still emits some amount of pollutants).

NGHM can help us in achieving SDG 7 (Energy Security & Clean Energy) by 2030 and Contribute to Amrit Kal goal of Budget 2023-24.

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

The recent Joshimath incidents of land subsidence has raised the question of disaster management & env. conservation in Himalayan region.

⇒ Key lessons from Joshimath incident

(1) Need for balancing economic development with sustainable development and reconciling the two.

(2) Promotion of Environmental Impact Assessment and Social Impact Assessment (SIA) of development projects

(eg) Taporan project in the Joshimath case.

(3) Need for understanding carrying capacity of Nature & respecting that (env. centric approach.)

Candidates must not write on this margin

(4) Need for resilient disaster management pre, during & post disaster & focusing more on preventive management.

(5) Need for collaboration & cooperation of various agencies & stakeholders.

## Way forward for effective management

(1) Implementation of NDMA guidelines in disaster management.

(2) Adoption of UN Sendai framework for disaster management.

(3) Need for EIA & SIA mechanism.

(4) Stop & Go determinism concept, limits to Growth concept realisation.

Therefore, the Joshimath case is an eye opener for disaster mgt. & env. conservation not only in Himalayas but other regions as well.

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

The demand for Khalistan - separate state/country for Sikhs has seen a resurgence in recent times posing a threat to sovereignty & integrity of India.

⇒ Recent developments on Khalistan issue

(1) Rise of radical trend disrespecting rule of law & the Constitution of India, against national integration.

(2) Use of religious forum for raising the Khalistan issue.

(3) Gain of sympathy abroad in countries like Canada, USA, Australia etc affecting foreign policy of India & bilateral relations

Candidates must not write on this margin

(4) Open use of arms, weapons and showcasting unity of strength.

Eg Recent issue in Punjab, ghesaoing police station and releasing their members.

Measures for tackling the issue

(1) Analyse & understand the recurring issue of Khalistan (ideological, political, financial dimension etc)

(2) Ensuring proper law & order and preventing raising of such issue. for this police needs effective man-power.

(3) Dissociate Khalistan issue from religion by engaging stakeholders

(4) Develop proper understanding at global level & effective mechanism to address the issue.

The issue needs urgent redressal & attention before it gets complicated. ↓

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

The use of drones to facilitate illicit activities has posed a serious threat to internal security of India.

⇒ Drone operation – threat to border security

(1) Drug smuggling & trafficking, for example, recent cases in J&K, Punjab etc.

(2) Security threat as drones attached with bombs, weapons posed huge challenge for security forces

(3) Lack of proper infrastructure in border areas which complicates its effective management.

(4) Lack of human resource & training to security forces

Candidates must not write on this margin

(5) Its usage by non-state actors for border surveillance & incursion

⇒ Measures to address the issue

(1) Border security forces need to be given proper infrastructure & human resource.

(2) Effective border surveillance through integration of ICT in border management.

(3) Regulation of drone sector and proper data & record

(4) Cooperation with other countries for deeper understanding.

e.g. with Israel who have in-depth knowledge.

The illegal operation of drones therefore needs an integrated approach to ensure border security & security of the nation as a whole.

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

Electricity Amendment Bill 2022 was introduced to address the issues faced by electricity sector in India.

⇒ Advantages of the Bill

(1) Consumers → more choice as there is no need to get electricity from one electricity regulator

→ reduce cost of electricity as it promotes competitive prices.

(2) Discoms → Address the financial loss of DISCOMs

→ provides for redressal of high ATEC cost faced by DISCOMs.

Provides proper infrastructure for DISCOMs

Candidates must not write on this margin

Environment → promotes judicious use of electricity

→ SDG 7 (Clean energy) by 2030

prevents environmental cost & redressal of such impact for the same.

⇒ Shortcomings

↳ Electricity falls under (State List) of 7th schedule, thus implementation issue remains

↳ huge financial loss of DISCOMs not properly addressed by the Bill

↳ promotes Subsidies of electricity, thus Green Revolution region continues using this for water-intensive crops

Candidates must not write on this margin

↳ Doesn't address regional disparities of electricity availability.

⇒ Measures

↳ An integrated reform of electricity sector

↳ Generation from clean & renewable means

↳ Addressing regional disparities

↳ Cooperation with state govts & central govt.

The bill is a step in the right direction and need of the hour is to have a more Integrated approach.

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 was established in 1982 to ensure regulation of share market & safeguarding interests of investors.

Role of SEBI
- prevents insider trading
- regulation of stock market
- investors interest promotion
- Credible Information on securities.

Challenges
- Short-selling issue (e.g. Hindenburg issue)
- Infrastructural issues
- regulation issue & Lack of cooperation.

eg. Arshad Mehta Case

Candidates must not write on this margin

Reforms → SEBI rules implementation in Letter & Spirit

→ more Statutory backing to SEBI

→ coordination with various agencies & Stakeholders

→ prevents insider trading (Viswanathan Committee recommendation)

→ promoting ESG (Environmental & Social Governance in Corporate Sector)

Therefore, SEBI is an important player in the economy of the country.

Candidates must not write on this margin



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 contributes ≃ 17% to the GDP of our country, more than 50% of total employment and plays a crucial role in Indian economy.

⇒ Issues that impede agri. sector

(1) Lack of effective land reforms which affects agriculture production & productivity.

(2) Dependance on monsoon (only 40% of agri. land is irrigated)

(3) Fragmentation of land holdings (only 1.08 ha as per Economic Survey 2020)

(4) Dominance of small & marginal farmers (86% of total farmers) which impedes adoption of modern technology due to lack of eco. scale.

Candidates must not write on this margin

(5) Rise in cost of input for farms, which affects poor farmers and also prevents remunerative price realisation.

(6) Climate change - affecting yield & productivity

(e.g) Recent Locust attack in western India.

⇒ Role of technology in addressing the issue

(1) Precision farming through the use of AI can make dealing with climate vagaries effective

(2) Sustainable & Conservation Agriculture by promoting judicious use of resources

(e.g) water usage in agri through drip irrigation, Soil health Card etc

(3) Reduce fertilizer usage in excessive amount (NPK ratio) in particular from present 8:3:1 to recommended ratio of 4:2:1.

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④ Mechanisation of agri. will reduce the problem of disguised unemployment in the sector.

⑤ Ensures level playing field for all farmer & contribute to farmer's income (Ashok Dalwai Committee)

eg Use of drones in farming

Challenges → High cost of technology

→ dominance of small & marginal farmers (86%) makes adoption of tech less feasible.

→ Inter-regional & Inter-personal disparities

* Inequalities (eg. Green Revolution region more at an advantage)

Therefore, apart from usage of technology, the agri. sector needs a robust reform and approach.

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

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

The promotion of irrigation in agriculture can both have negative and positive consequences on the sector and environment as a whole.

⇒ Impact of Irrigation on env. & natural resources

(A) Positive impact

(1) Promotes judicious use of resources

(e.g) Drip irrigation reduces water wastage by 70 - 80% than open irrigation system.

(2) Positive impact on biodiversity by addressing the needs of the ecosystem as a whole.

(e.g) watershed irrigation model.

(3) Address regional disparities in water availability by transporting water to

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deficient areas from surplus areas.

(4) Reduce inter-personal disparities esp. for small & marginal farmers. (86% of total farmers) and enhance farmer's income.

(B) Negative impact

(1) Contributes to Soil salinity & alkanity as irrigation contributes to more capilary action & water table.

(e.g) Irrigation in Green Revolution area, leading to Arsenic & Flouride pollution.

(2) Promotes water-intensive crops in less suitable area, which hampers env. & natural resources.

(e.g) Use of rice & wheat in Punjab & Haryana

(3) Irrigation — 40% only, thus not benefitting small & marginal farmers.

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(4) Indira Gandhi Canal Irrigation project has caused more damage than benefit to the environment.

⇒ Measures to ensure sustainability & equity

(1) Role of technology such as AI in ensuring efficient & proper irrigation.

(2) Promoting drip irrigation to reduce wastage & enhance efficiency in agri. sector.

(3) Govt. handholding such as PM-KUSUM, PM-Krishi Sinchayee initiative, Atal Bhujal ak

(4) Promoting awareness to farmers in particular & society in general.

(5) Watershed management to address negative consequences.

Thus, if these challenges are addressed, it can have multiplier effect.

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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 has been blessed with scientists like Dr. Homi & Dr. Vikram who were able to think much ahead of their times in scientific field.

⇒ Contribution of Dr. Homi in atomic energy

(1) Understanding of Quantum physics at atomic & subatomic level of energy & matter

(2) Institution of DIAE which stands as a pioneer today in atomic energy field not only in India but at global level too.

(3) Development of nuclear technology and its spin off benefits to India – in terms of energy Security

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(4) Clean Energy through generation of the properties of atoms, which can contribute to Net Zero Carbon Emission by 2070.

(5) Development of nuclear arsenals, which India tested in 1964 (Operation Smiling Buddha) was pioneered by Bhabha's idea & innovation.

⇒ Contribution of Vikram Sarabhai (Space technology)

(1) Role in ISRO formation – Vikram Sarabhai laid the foundation for space technology in India, which was later renamed as ISRO.

(2) Known as Father of Space technology in India whose ideas & innovations provide a roadmap for space exploration.

(3) Leadership skills and ability to work as a team which inspires his colleagues & act as role model for youngsters.

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(4) Development of PSLV & GSLV, which is the mainstay of space technology in India is possible because of his research in space technology.

(5) Demonstrated India's capability in space domain with limited resource (e.g) Mars Exploration.

Thus, Dr. Homi & Dr Vikram had contributed immensely in their respective field for India. ✓

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

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

AI (Artificial Intelligence) refers to the mimicking of human intelligence through the use of machines & technologies.

⇒ AI potential to push boundaries of innovation

(1) Industrial Revolution 4.0 – AI has huge potential in making the realisation of IR 4.0 through innovation (WEF report).

(2) Agriculture Sector – AI have a liberating impact in agri. sector

(a) Precision farming, use of drones in agri. sector.

(3) Economy – emerging technologies such as Web 3.0, Big Data Analytics through AI can drive innovation → multiplier effect.

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④ More Research & Development (R+D) which can give more room for start-ups, entrepreneurs in innovation field.

⑤ Health sector - use of AI in medical field & operation can make health issues more effective & reduce human error.

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⇒ AI - societal impact & challenges

① Privacy issue of individuals as AI requires huge generation of data & information.

eg Against Artt. 19 (Rt. to privacy)

② Security challenges, use of deepfakes through AI pose challenge for law & order & can accentuate communal & societal disorder.

③ Ethical challenges - excessive surveillance through AI has ethical dilemma (social context)

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(4) Lack of personal data protection and presence of various stakeholders.

(e.g) Issue of Cambridge Analytica

(5) Lack of regulation as generative AI are beyond the borders of national law.

(e.g) GAFA companies have global presence

& Lack of societal impact commitment can lead to various issues.

There, while generative AI has great potential on one hand, challenges also do remain and requires proper redressal. //

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

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

The "Mangrove Alliance for Climate" was launched as a part of Sharm El-Sheikh declaration in COP27, led by UAE & US.

⇒ Purpose of the Alliance

(1) Address environmental concerns created due to destruction of mangroves

(e.g) Salt water intrusion in coastal areas.

(2) Give due recognition to the role of mangrove as an important player in ecosystem services (provisioning, regulating services etc)

(3) Promote international collaboration and alliance for sustainable use & conservation of mangroves.

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(4) Address the funding mechanism for conservation of Mangroves esp. in developing & least developed countries.

(5) Provide Research & Development to understand the role of mangroves in the ecosystem in its entirety.

⇒ Importance of mangroves - coastal ecology

(1) Regulating services - act as kidney of Coastal ecosystem by filtering pollutants before discharging into the oceans.

(2) Provisioning services - Act as shelter belt for disasters.

Eg Recent Cyclone Amphan in the Bay of Bengal.

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(3) Coastal Biodiversity - mangroves are home to various flora & fauna.

(e.g) Royal Bengal Tiger in the Sundarbans.

(4) Prevents Coastal erosion by acting as a transitioning belt in coastal ecology between terrestrial & aquatic ecosystem.

(5) Controls sea water intrusion, therefore promotes agri. activities in the deltaic regions.

Mangroves have been cleared at an alarming rate & therefore the Mangrove Alliance for Climate is a right step in the right direction to address this issue.

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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 an India-led initiative in recognition of the UN Sendai framework for disaster management.

⇒ CDRI - bringing more robustness to Disaster mgt.

(1) Recognition of preventive disaster management by ensuring resilient infrastructure
(e.g) National Building Code

(2) Dealing disaster at an integrated level (pre-During-post) disaster and effective mechanism for swift response.

(3) Cooperation & Collaboration of various agencies and stakeholders and providing a common

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platform.

⇒ Need for a new Strategy to tackle disaster in India

(1) Lack of integrated approach (disaster mgt. addressed in silos) Present disaster mgt. focuses mainly on post-disaster.

(2) Disaster management comes under Ministry of Home Affairs but requires multiple engagement of ministries & agencies.

(3) Lack of people's participation while framing disaster management strategy, therefore present strategy more of TOP-DOWN APPROACH

(4) Multiple dimensions of disaster - biological, physical, natural etc.

(Eg) Recent COVID case/pandemic highlights ill-preparedness of disaster management.

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Way forward

→ Implementation of NDMA guidelines for disaster management

→ letter & spirit Implementation of Disaster Management Act 2005 by engaging all stakeholders

→ ensuring people's participation, proper Consultation in sync with UN Sendai framework

→ focussing equally on pre-during-post disaster management.

Therefore, 3Ps — Proactive, Participative & Preventive strategy for disaster mgt. is the need of the hour.

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

(250 शब्दों में उत्तर दीजिए) 15 अंक

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

(Answer in 250 words) 15 Marks

Ransomware refers to deliberate refusal of access for demand for ransom. Such cases has seen an abrupt rise.

(e.g) Recent ransomware attack in AIIMS Delhi

⇒ Key factors contributing to such trend

(1) Geopolitical dimensions - hustle for hybrid warfare between countries.

(e.g) Russia's role in US election campaign.

(2) Vested interest by countries targetting critical infrastructure

(e.g) Targetting of Kudankulam Nuclear plant recently by China.

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(3) Role of non-state actors which do not respect a country sovereignty and integrity.

(4) Lack of international rules & treaty, national laws to deal with such issues.

⇒ Impact of such attacks on various sectors

(A) Economy

(1) Power sector - disruption of powers stations impact energy availability & energy security, hampering economic growth.

eg China attack on Mumbai Power stations

(2) Health & Education - can lead to hampering of human development in a country.

(B) Individual & National Security

- Privacy issue - eg. AIIMS Cyber attack & ransomware exposing health records of many individuals and important dignitaries.

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(c) International level

(1) Foreign policy - issue of managing divergences & convergence of like minded countries.

(2) Bilateral relations - eg. b/w US-Russia, US-China, India-China due to increased cyber attacks

Steps taken → India → development of CERT-IN

→ International level → Budapest Convention (India not part of it)

Ensuring a strong & robust cybersecurity is therefore a necessity which cannot be neglected. //

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

(250 शब्दों में उत्तर दीजिए) 15 अंक

In the context of border security, how can cooperation and coordination between different security agencies be improved to ensure effective and efficient management of coastal and terrestrial borders?

(Answer in 250 words) 15 Marks

Border security is a complex and challenging task which requires cohesion of approach and strategy.

⇒ Cooperation & Coordination of security agencies in Border Security.

(1) Address the silo approach of border management

e.g. Drug trafficking from Golden Triangle is dealt by Assam Rifles & National Narcotics Bureau & IB in North East

(2) Address policy issues of having different approaches and developing synergy in ensuring robust border security.

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(3) Cooperation & Collaboration in maritime security.

(eg) Coast Guard & Indian Navy in coastal areas

(4) Reduces conflict between security agencies and also prevents miscommunication among them.

(5) Address coastal & territorial border routes used by terrorists.

(e.g) Mumbai terror attack led to formation of NIA to deal with the issue of coordination.

(6) Promotes inter-ministerial collaboration.

(eg.) Between ministries of Home Affairs, Defence, etc.

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Challenges → Infrastructural issues in Border areas

→ manning of border by different Security agencies (BSF, ITBP, Assam Rifles etc

→ tough terrain & porous borders

→ Use of Deepweb & Darkweb by terrorist

→ Role of State sponsored activities such as by Pakistan.

Cooperation & Coordination have a huge role to narrow the gap of communication & cultivate to effective border management.

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Space for Rough Work

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