NEXT IAS

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 : MD BURHAN ZAMAN

Roll No. : MT23RCAPA083

Registration Number : ..... Date of Examination : 14/08/2023

Exam Centre : Old Rajinder Nagar ☐ Bhopal ☐ Online ☐

Test - 3

Code : TC705

RCA Batch 2023

GENERAL INSTRUCTIONS

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

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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			
9	17			
10	19			
11	21			
12	24			
13	27			
14	30			
15	33			
16	36			
17	39			
18	42			
19	45			
20	48			
Grand Total				

Signature

MACRO COMMENTS

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5. If you wish to cancel any work, draw your pen through it or write "Cancelled" across it, otherwise it may be evaluated.
6. Handover your QCA Booklet personally to the invigilator before leaving the examination hall.

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

(150 शब्दों में उत्तर दीजिए) 10 अंक

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

(Answer in 150 words) 10 Marks

~~Windfall tax refers~~ In Union Budget 2023-24, the Union government has increased the rate of windfall tax.

Meaning Windfall tax refers to the tax in one-time gain in a large amount of money in like Lottery, gambling etc.

Rationale Windfall tax can effectively redistribute wealth and promote greater economic equality

A. ~~Red~~ Effectively redistribute wealth:

1. Taxing the high amount of gain — not much burden ~~of~~ on the taxed person
2. Strengthening government exchequer: money used for social expenditure

3

Candidates must not write on this margin

B. **Promote greater economic equality**

1. Prevent Concentration of wealth: DPSP Article 38 of Indian Constitution
2. ~~Re~~ Progressive taxation policy – and pro-poor in nature
3. Channelizing money from High ~~N~~ Net Worth (~~Ind~~) Individual (HNI) to the masses.

However there are some issues too

Issues
1. Beneficiary not always HNI
2. windfall tax does not directly translate into wealth redistribution
3. ~~D~~ tax other measures also required for greater economic equality

However, windfall tax is a step in right direction to ~~achieve~~ achieve greater economic equality as envisaged in our Constitution.

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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 Monetary Policy Committee (MPC) regime started in 2016 has made Inflation targeting as the primary objective of RBI.

Perceived success of implementing inflation targeting under new MPC regime

1. Success in checking inflation – in the ~~rang~~ stated range of 4% ± 2%.
2. Policy clarity regarding the functioning of and role of RBI
3. Expertise of government nominee enhances the efficiency of MPC.
4. ~~Integrating Mone~~ Aligning Monetary policy as per the Fiscal policy

Candidates must not write on this margin

Challenges of inflation targeting under new MPC regime

1. Restricted the role of RBI by confining it to Inflation targetting
2. Affect on other macro-economic parameters due to inflation targeting - eg fiscal deficit, Government debt.
3. Dilution of RBI's independence - involving nominee from Government's side
4. Breach of inflation range - during Covid-19 pandemic

However, Inflation target under new MPC regime has overall remained a success keeping the inflation under permissible range

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

UN has declared '2023' as the International Year of Millets because of its importance in sustainable agriculture and food security

Potential of millet production in promoting sustainable agriculture and improving food security in India

A. **Sustainable agriculture**

1. Agro-climate-based agriculture
2. Discouraging mono-culture practices
3. Efficient utilisation of water resources
4. Improving health of soil
5. Less requirement of insecticides and pesticides
6. Easily compatible with Integrated farming system
7. Low cost of its inputs

Candidates must not write on this margin

B. Improving Food Security

1. Reliable source – due to drought resistant nature.

2. Address Hidden hunger – source of micro nutrients ~~s~~ i.e., Nutritional Security

3. Reduce reliance on other crops like rice, wheat

Q.

Indian government ~~for~~ is promoting millets through National Millet Mission ~~for~~.

Thus ~~&~~ the millets can address the twin issue of ~~sus~~ agriculture and food - Security

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 is ~~start~~ launched by the Jal Shakti Ministry to provide clean ~~act~~ & and safe drinking water to all households

~~Signifan.~~ **Significance of the mission**

A. **Ensuring availability**

1. Through functional household tap.
2. ~~Connecting~~ Ensuring availability through reliable source
3. Promoting water harvesting — making it a Jan Andolan

& B. **Ensuring accessibility**

1. ~~Ensu~~ Ensuring Connectivity of all households

Candidates must not write on this margin

2. Focus on WASH initiative

3. Localised source of drinking water in remote areas — eg Traditional water storage

c. Other significance → 1. Promoting watershed development
→ 2. Improving water resource condition
→ 3. Awareness regarding water.

Underlying impediments

1. Delay in implementation of projects
2. Non-functional taps in household
3. Behavioural impediments among public
4. Poor quality of water in some places.

However the Jal Jeevan mission has created awareness among the masses and is taking India toward SDG 6 of clean water and Sanitation

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 ~~Stor~~ Energy Storage System refers to large scale storage ~~to~~ system to store power from seasonal energy source like wind energy and solar energy

Application of BESS

1. Storage of power from seasonal source - solar, wind energy
2. Source of power for difficult terrain eg Mountain region.
3. Can play a role in Electric vehicle policy

Candidates must not write on this margin

How it can revolutionize energy program

1. Decarbonize energy sector
2. Alternate source of energy
3. Help achieve NDC target
4. Harnessing solar and wind potential.

BESS can make India achieve its energy security and reduce dependence on imports.

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

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

Gaganyaan mission of ISRO has the objective of a manned mission to travel to space and Conducting researches

Developments of Gaganyaan mission

1. First manned mission of India
2. Provision of reentry of the space vehicle into Earth's atmosphere
3. The mission requires a number of discrete technology like REX, LEX, etc which requires ISRO to make Collaboration with France and Russia.

Challenges in Gaganyaan mission

1. Technology ~~the~~ availability : All

Candidates must not write on this margin

technology are not available with ISRO

2. Training of the Astronauts: at space condition is done in collaboration with France

3. Equipments like space suit, diet, etc.

4. Covid-19 pandemic - slowed progress of the mission

Benefits for the Society

1. Technology demonstration mission of ISRO
2. Understanding happening of space
3. knowing the origin and evolution of universe
4. Predicting the future of Universe
5. Understanding the origin of life on Earth and evolution of life-forms.

The Gaganyaan mission when completed will be another jewel in the crown of ISRO and India's space sector.

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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

India's National Green Hydrogen Mission aims at development of Green Hydrogen and its infrastructure to tackle Climate Change and Pollution

Green Hydrogen acting as Silver bullet against Climate change and Pollution

A Climate change 1. Sustainable method of its production.

2. Low carbon foot print.

3. Decarbonize hard-to-decarbonize sector eg Steel sector.

4. Reduce GHG emission from transportation sector.

Candidates must not write on this margin

B. **Pollution** 1. Control air pollution

2. Check PM 2.5 and PM 10 Concentration.

3. Reduces formation of Smog — both London Smog, Los Angeles Smog

However, it cannot be termed a silver bullet

Challenges 1. Issue in overhauling all systems into Green hydrogen

2. Non-availability of data regarding efficacy at large scale.

3. Volatility and inflammability of Hydrogen

4. No mechanism to check whether Hydrogen is green or from other source

However Green hydrogen can play an important role in achieving SDG 7 of ~~Clean~~, a— clean and affordable energy

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 the Joshimath town in Uttarakhand has witnessed the subsidence phenomenon resulting in panic and migration of people.

The incident has provided lessons for disaster management and environmental conservation in Himalayan region.

Key lessons from the recent disaster

A. **Disaster management**

1. Capacity building of the local administration
2. Information flow and real-time analysis of disaster. — Early warning system.
3. Training of local community to deal with disaster.
4. Mock drill before actual disaster.

Candidates must not write on this margin

5. Awareness as to be part of education system

B. **Environmental Conservation**

1. Environmental Impact Assessment (EIA) to be followed in letter and spirit.

2. Thorough analysis of Environmentally vulnerable areas — devising long term strategy

3. Human activities must not exceed carrying capacity of the environment. eg Construction, Tourism

4. Taking serious note of past studies - eg M.C Mishra Committee recommendations.

5.

Thus the Himalayan region being an environmentally vulnerable region require resilient approach.

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

In recent times, there has been Pro-reemergence of Khalistan activities in Punjab and in some other parts of the world.

Recent radical trends relating to Khalistan issue in Punjab

1. Revival of Khalistani operatives - based on intelligence reports.
2. Increase in radicalism - & recent radical act activities of Nihang Sikh.
3. Rise in radical leader: in the form of Amritpal Singh, seen as Bhindrewale of recent times
4. International nexus of khalistani -

Candidates must not write on this margin

Events in Canada, UK, Australia against Indian Embassy.

Measures to handle the issue

1. Strict Law and Order in the State.
2. Invoking UAPA and NSA against radical Khalistani et leaders
3. International Collaboration for extradition of Khalistani leaders.
4. Taking Community in Confidence
5. Non-politicization of the issue
6. ~~Border~~ Strict Border management - especially Indo-Pak border.

The measures can prevent Punjab going back into 1980s and usher a period of peace and development in the state.

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

Indian border security forces are facing a new ~~et~~ security challenge emanating from the drone operations.

Anonymity and Ease of drone operation Contribute to India's border security challenge

1. Use by cross-border militants to send arms to their operatives. eg Jammu & Kashmir.

2. Use in organized crime - ~~Use~~ transporting contraband like narcotics eg Incidences in Punjab

3. Reconnaissance and information collection by militant organisations.

Candidates must not write on this margin

4. ~~Pumping~~ Pumping FICN (Fake Currency) in India - India-Bangladesh borders

Suggestions to tackle the issue

1. National policy to deal with drone issue
2. ~~Radar~~ State of the art technology to detect and neutralise the drone
3. Involving local community in reporting unusual drone incidences
4. Capacity building of Police and Border security forces
5. Better guarding of Border areas.

Tackling the drone issue will add a more level of safety to India's Border management

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 has brought several changes for the advantage of consumers, DISCOMS and Environment.

Recent changes in Electricity Amendment Bill

1. Reduced tariff cost
2. Support to DISCOMS.
3. Waiving-off dues of DISCOMS who are in debt.
4. Integration of non-renewable energy into present energy grid.
5. Renewable Purchase Obligation (RPO) on DISCOMS.

Candidates must not write on this margin

Advantages

A. **Consumers** — 1. Reduce cost of tariff
2. Seamless supply of electricity
3. Increase in Connectivity & Reliability

B. **DISCOMs** — 1. Waiving-off debts
2. Diversification of source.

C. **Environment** — 1. Promotion of Renewable energy
2. Less carbon foot print of Energy sector.

Short Comings

1. Create ~~Ante~~ federal issue — with some states opposing it. eg West Bengal.
2. Incentivising inefficiency of DISCOMS.
3. Problem of integration of Renewable energy into present grid system
4. Issue of reliability of electricity source.

Candidates must not write on this margin

Measures required

1. Promotion of Renewable energy
2. Increasing efficiency of DISCOMs
3. Tackle Seasonality of Solar and wind energy
4.

The ~~other~~ sustainable and Healthy Electricity sector will boost India's development and make it a $5 trillion economy

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

Securities and Exchange Board of India (SEBI) has been created as a statutory body through SEBI Act, 1992

Importance of SEBI

1. Regulation of Share market.
2. Safeguarding interest of investors - including minority ~~in stakeholders~~ investors
3. ~~3)~~ Ensuring clean corporate governance environment

Challenges faced by SEBI

1. Unethical means used by Corporate.

Candidates must not write on this margin

2. Balancing between fair practice and Ease of doing business.

3 Information Suppression by the Companies.

4. Technical irregularities in Companies functioning.

5. Influencing the market using dominant position in market.

6. Maintaining people trust in share market.

Reforms needed

1. More power to SEBI to ensure adherence to rules and regulations

2. Clear Removing ambiguity in rules

Candidates must not write on this margin

3. Effective Strategy to protect interest of small investors

4. Making share market more inclusive

The above measures can address the issue faced by share market and SEBI

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

(250 शब्दों में उत्तर दीजिए) 15 अंक

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

(Answer in 250 words) 15 Marks

Agriculture sector is a major contributor to Indian economy contributing 52% to employment and 20% to nation's GDP

However its growth and development is plagued by several constraints.

Constraints plaguing agriculture sector impeding its growth and development

A. Input based

1. Fragmented land holding and small farm size - Average holding is 1.08 ha. (2019-20).
2. Deteriorated Soil Condition
3. Non-agroclimate based agriculture
4. Over exploitation of groundwater resource

Candidates must not write on this margin

B. Process based

1. Lack of mechanization
2. Information Lack of latest technology of farming
3. Mono culture practised

C. Storage :

1. Lack of ware houses
2. Lack of Cold Storage Chain
3. Poor condition of APMCs

D. Transport and Marketing

1. Lack of transport facilities
2. Information asymmetry to farmers
3. Cartelization in APMCs

Role of technology in overcoming these constraints

A. Input-based →
1. Land Consolidation — using SVAMITVA Scheme
2. Soil Health Card
3. Agro-climatic for farming using data from ISRO
4. Micro-irrigation and drip-irrigation - PM Krishi Sinchai Yojana

Candidates must not write on this margin

B. Process based → 1. Mechanization of farm — use of IOT
→ 2. Kisan Call centre - extension service
→ 3. Crop-diversification — through intercropping

C. Storage → 1. eNWC — for warehousing
→ 2. ~~Agri~~ UDAN Development of Cold chain warehouses

D. Transport and marketing → 1. eNAM — creating national market
→ 2. Agri-UDAN and ~~Agri~~ KISAN Rail
→ 3. Export potential - through APEDA

E. Others → 1. Insurance — PM Fasal Bima Yojana
→ 2. Integrated Farming promotion.

Thus the above measures can resolve the constraints and contributing in doubling farmers income.

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

Indian agriculture is having nearly 48% of the total net cropped area under irrigation contributing to agricultural ~~provide~~ productivity.

However the irrigation practice in India has impacted environment and natural resources.

Impact of irrigation on environment and natural resources

A. **On Environment**

1. Depletion of aquifers — ~~groundwater~~ ground-water extraction
2. Eutrophication of water bodies — agricultural run-off.
3. Bio-magnification and Bio-accumulation of harmful chemicals — run-off of insecticides and pesticides
4. Monoculture practices - threat to biodiversity

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5. Creation of resistant pests - eg use of DDT

6. Algal bloom and proliferation of weeds.

7.

B. **On natural resources**

1. Depletion of ground water - 89% ground-water used in agriculture (Agriculture census 2014-15)

2. Contamination of water bodies

3. Deterioration of soil health.

4. Vulnerability of biodiversity to stronger pests.

5. Paddy cultivation using flood irrigation - having greenhouse effect.

In order to address the issue, following measures can be taken

Measures to ensure sustainability and equity of irrigation practice

A. **Sustainability** 1. Prudent use of Ground-water and its recharge mechanism

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2. Rain water harvesting — eg Roof top.
3. Traditional water harvesting mechanism — eg Johad, Baoli, Ahir-pynes
4. Micro-irrigation and drip-irrigation.
5. Treated run-off from agricultural fields

B. Equity — 1. Agro-Climate based farming
2. Intercropping practice.
3. Switch to Integrated farming System
4. Interlinking of rivers
5. Watershed based irrigation System

Thus these measures can ensure a Sustainable and equitable irrigation practice and align agriculture along SDG 11 of responsible Communities

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

Dr. Homi Jehangir Bhabha and Dr. Vikram Ambalal Sarabhai are great names in indigenization of science and technology in the post-independent India

How India benefitted strategically from the two ~~toged~~ legends

A. Dr. Homi Jehangir Bhabha in field of atomic energy

1. Initiating Culture of Particle physics in post-independent India

2. Developing India's first Cyclotron.

3. Immense Contribution in God-particle research

Candidates must not write on this margin

4. Contributed in the Einstein theory of relativity and time-space dichotomy

5. Creating a new generation of scientists who took forward India in atomic energy field

6. Designing three-stage model of Indias nuclear program.

7. Played a role in Scientific Institution Building eg BARC

B. Dr. Vikram Ambalal Sarabhai in the field of Space technology

1. Pioneer of Space research in India

2. ~~Lead~~ key role in establishment of ISRO (Indian Space Research Organisation)

3. Contributed in Rohini Sounded Rocket project.

Candidates must not write on this margin

4. Brainchild behind the Aryabhatta project

5. Created new generation of future space scientists - like Dr. A.P.J. Abdul kalam

6. Placed India in the global map of space research.

7. Formulated vision for space sector and its strategic benefits

Thus Dr. H.J. Bhabha and Dr. Vikram A. Sarabhai immensely contributed strategically in India's scientific development.

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 has been an integral part of emerging technology and Industrial revolution 4.0

Advantages of Generative AI

1. Enhancing human capability
2. ~~Re~~ Reducing human workload
3. Do the repetitive work
4. Application in other ~~tech~~ Smart technology. eg IOT.
5. Augmenting Human research.

The most recent example of Generative AI is ChatGPT which is revolutionising the

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world.

However the societal impact of Generative AI is still unknown to the mankind.

Societal impacts raising substantial challenges

1. Large scale job losses
2. Affecting human efficiency
3. Endorsing social inequality
4. Promoting racism, hierarchy
5. A Frankenstein mond monster - having unintended consequences.

Measures which can be taken

1. More research before its application in all sectors.

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2. Eliminating inherent bias of the technology

3. Compensating of job losses

'Science is a useful slave but a dangerous master. Thus the application of generative AI should be can done considering welfare of society as a criteria

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

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

"Mangrove Alliance for Climate" is an intergovernmental coalition launched at CoP27 to harness Mangrove ecosystem role in fighting climate change

Purpose of Mangrove Alliance for Climate

1. Intergovernmental Collaboration to promote mangrove ecosystem.
2. Highlighting importance of Mangroves in figut against climate change.
3. Involving other Stakeholders – like Business, Academia, Civil Society in promoting Mangrove
4. Creating awareness and sensitisation
5. Establishing funding mechanism for

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projects under the Coalition

6. ~~Resear~~ Promoting research initiatives and publishing reports.

Mangroves are an important ecosystem in tropical region

Importance of mangroves in maintaining Coastal ecology of tropical nations

1. Bioshield against disasters - eg cyclone, ~~disaster~~ Tsunami.
2. Supporting Mangrove ~~floral~~ ~~floral~~ flora and fauna - eg Sundarban tigers, Sundari tree
3. Ecotone region - between fresh water and saline water.
4. Protecting Coastal erosion.
5. Providing provisioning services to local population.

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6. Maintaining temperature and micro climate of Coastal region

7. Carbon Sequestration - through its a huge Canopy density.

India The Ganga - Brahmaputra delta having Sundarbans is the largest mangrove in the world.

Thus Therefore mangroves are the natural Nature - based Solution (NBS) to Climate change adaptation and mitigation in the Coastal region

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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

The Coalition for Disaster Resilient Infrastructure (CDRI) is an international Coalition for developing ~~state~~ disaster-resilient infrastructure based on increased intensity and frequency of natural and man made disaster.

Features of CDRI

1. Intergovernmental nature
2. Creation of Strategies for different regions.
3. Research and development (R&D) for finding solution to new problems.
4. Funding mechanism to developing and Least developing nations.

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5. Technology transfer from nations having resilient expertise. eg Earthquake resistant technology from Japan.

Need for a need Strategy to tackle disasters in India

1. Vacuum in pre-disaster measures - as In
2. Need for integrating into a global forum
3. Technology transfer and expertise from other nations expertise
4. Retrofitting of old infra-structure
5. Aligning itself according to Sendai frame-work Commitments.
6. In Diverse nature of present-day disasters - eg D Cloud burst, Urban flood.
7. International Collaboration of academia and researchers to exchange knowledge.

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Thus ~~the~~ India's presence in CDRI will enhances ~~for~~ India's pre-disaster capabilities and help in adaptation to disaster and mitigate the losses during disaster.

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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

Recent Cyber ransomware attacks on Critical infrastructure of kundakulam Nuclear power station and Mumbai power grid highlights the need for stronger cybersecurity measures and policies.

Present Cybersecurity infrastructure in India

1. Need NCIIPC - National Critical Infrastructure and Information Protection Centre.
2. CERT-IN
3. I4C
4. Cyber Swacchta kendra (CSK)

Factors responsible for rising ransomware attack

1. Role of state actors — in Cyber attacks.

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2. Cyber space - as a new domain of warfare

3. Presence of vital information in cyber-space

4. Affecting the image of national government in protecting their information

5. Rise of hackers and terrorist organizations

6. Espionage by other governments.

7. 'Data' as the new oil

Impact of these attacks in various sectors

1. Denial of service -

2. Impacting e-governance schemes

3. Affecting people trust in the government.

4. Health: → ~~Loss~~ of misuse of health data
   ↘ affecting Health services

5. International relations → deteriorating bilateral relations

6. Polity: undermining Government's authority

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and challenging its sovereignty

Measures which can be taken

1. Gulshan rai Committee → Promote cyber resilience
   ↳ increase Research in cyber security.

2. ~~Hema~~ Hemachandra Meena Committee
   ↳ ~~D~~ Offensive cyber policy
   ↳ ~~Aug~~ Augmenting cyber fire walls.

In the age of Industrial Revolution 4.0, the ~~for~~ safety of cyberspace is synonymous to safeguarding the ~~sov~~ sovereignty of the nation.

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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

India is a vast Country with nearly 15,000 km international land border and 7516.6 km ~~Coastal~~ Coastline.

In order to guard India's border, a number of Security ~~forces~~ agencies are deployed

Different Security agencies for guarding Indias borders

A- Marine border → 1. India Coast Guard
→ 2. Marine Police Force
→ 3. Sagar Prahar Bal
→ 4. Coastal Police Stations.

B Land Border: → 1. Indo-Pak
→ 2. Indo-Bangladesh } Border Security Forces (BSF)
→ 3. Indo-Nepal } ~~Sasa~~ Sashastra Seema Bal (SSB)
4. Indo-Bhutan
→ 5. Indo-Myanmar – Assam Rifles (AR)
6. Sino-Indian – Indo Tibetan Border Police (ITBP)

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~~How to~~ How cooperation and Coordination between different agencies be improved

1. Creation of a National strategy - related to Border management.
2. Exchange of information and intelligence
3. Creation of Joint operation Centres (JOCs)
4. Conducting Mock exercises - at different geographical theatre
5. Uniformity in dealing with various agencies — from government sides.
6. Meeting of chief of different agencies in planning and strategising.
7. Uniformity in vigil against border, irrespective of the nation - eg Indo-Nepal is porous as compared to Indo-Pak border - eg Seema Haider infiltration case.

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8. Development of infra. structure – Smart. fencing

The cooperation and coordination between different security agencies can be improved through CIBMS (Comprehensive Integrated Border Management System) and Smart Fencing Initiatives like BOLD-QIT

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Space for Rough Work

NEXT IAS