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(To be filled by candidate)

Name of Candidate : ATIF

Roll No. : MT 23RCADA 069

Registration Number : ..... Date of Examination : .....

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			
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 in new natys of tax to promote economic equality & redistribution of wealth of nations

Redistribute wealth & equality

(1) Tax from rich and give to poor via welfare.

(2) Increase tax % when inequality increases.

(3) Progressive taxation

(4) Promote evidence based % taxation

Challenges

(1) loopholes in law to tax evasion

Candidates must not write on this margin

(2) Use of Base erosion profit shifting.

(3) Tax heaven countries use

(4) Use of digital methods like dark net & Cryptocurrency hard to trace

Way forward

(1) Strengthen digital surveillance

(2) Promote digital transactions

(3) Stringent laws.

(4) Use of extra tax money for target based poverty alleviation

Thus windfall tax can be effectively used to realise Welfare state DPSP Article 39.

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

Urjit Patel Committee recommended Monetary policy Committee having members from RBI and Govenment to target Inflation.

Success

(1) Inflation: from last 4 year have been in between 2 to 6% range. (except few exceptions).

(2) Growth: has been continue linked with healthy Inflation.

(3) Right and calculated Repo rate: leading to proper Credit disbursment

(4) Recent low repo rate increased credit penetration of MSME and ~~poor~~ housing of low end.

Candidates must not write on this margin

Challenges

(1) Recent Inflation of Quarter 1 and 2 of 2023 crossed 6% mark.

(2) Hugh food inflation
   (Eg) Tomato more than Rs100/kg July 2023

(3) Increased Repo in July, June 2023 hiking. Credit flow to Small MSME

(4) Data lag in calculation.

(5) large ~~data~~ quantity of data. makes targeting difficult.

(6) Huge informal sector (>90%) ~~reduces~~ leads to Skewed data.

Now, there needs to to addressed to property target Monetary policy for $5 trillion economy

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

2023 is being celebrated as International Year of Millet.

Potential for Sustainable agriculture

1. Water: use efficiency is high.
2. Resistant: to extreme weather events like drought.
3. Soil nutrition: replenished due to nitrogen fixing of some millets.
4. low fertilizer need.
5. Organic farming effectively practiced

Improving food security

1. Nutrition Security: as millets are nutritious rich.
2. Diversify food basket due to variety of Millet
   (Eg) Jowar, Bajra

Candidates must not write on this margin

(3) Food security! due to Climate resilience.

(4) High productivity even in rainfed area address food security.

Way forward

(1) Credit facility to farms

(5) Higher MSP.

(3) Proper Market infrastructure and intelligence.

(4) Export Promotion.

(5) Marketing, Branding, Sorting help.

This will help realise Doubling farmers Income as said by Ashok Dalwai Committee

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 was launched to provide access to piped drinking water to all household by 2024 along with comprehensive water management strategy..

Availability & Access will increase via piped connection, rooftop harvesting quality water supply & waste water Managed

Significance of Mission

(1) Decentralised water conservation.

(2) local Community participation
   (Eg) Bihar ~~Acts~~ Ahar conservation

(3) Indegenous knowledge sharing.

(4) Digital mapping via satellite.

(5) Information based decision making

(6) Collective and Integrated approach to river basin.

Candidates must not write on this margin

Impediments

1. Funding: reqd to create water infrastructure (Eg) Green Bond.
2. Water Crisis: already there.
3. Expensive household rainwater harvesting.
4. Climate change and erratic monsoon.
   (Eg) 2023 monsoon 60% rain in July itself.
5. Fragmented approach of Ministry & body
   (Eg) Central Groundwater Commission looks at Groundwater
   Central water Commission looks only at Surface water.

Way forward

1. Funding (Eg) Green Bond, Municipal Bond
2. Nation water Commission merging two CWC & CGC.

Thus, it will help realise Atmanirbhar Bharat and Jal Jeevan Hariyali.

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 Storarage Systen (BESS) is various techniques through which we can store energy in battery during surplus time and use it as and when required

Example: Lithium Ion battery
Sand Battery – Scandenevia

Applications

1. Energy for all: specially in inaccessible areas like Island, Mountain
   - Eg Project in Ladakh
2. Energy security: to store solar energy duriy daytime & use at night
3. Peak demand access: leading to reduced stress & foreqent power cuts
4. Clean energy: helpiy in transitio to Climate Smart applicatio
   - Eg Hydrogen ~~Bus~~-powered Bus Tesla.

Candidates must not write on this margin

Revolutionising energy program

1. Access : to energy anywhere.
   - Eg: Li-Ion Cars.
2. Shift to clean energy.
3. Sun never sets :- energy produced one place during sunlight can be transfered to other place not having. Eg: OSOGOW
4. Energy security : by storing energy during low price.
5. Creation of advanced Battery.
6. Industry transition -
   - Eg: Cement industry now using battery power in place of coal.

Thus, it will help in realising SDG 7 and SDG 13 goal to address Climate change & clean energy.

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

Gaganyan Mission of ISRO is ~~launched to examine the dark side of moon and explore opportunity for future mission from moon.~~ the potential of humans in space mission.

Developments

1. Developed Soft landing technique
2. Effective use of Cryogenic engine
3. ~~Developed lander and Rover~~
4. ~~Self sustain Energy of Chan.~~
3. Developed Return and reusable Capsule.

Challenges

1. Delay: in project due to COVID and availability of Parts.
2. Nascent technology & sophisticated. We have newly used reusable technology.
3. Threat to human life.
4. Can lead to increase Space debris.

Candidates must not write on this margin

Possible benifits

(1) Technology advancement: to send humans to space.

(2) Economy: Can be used to expand private market.

(3) FDI: Can come.

(4) Space tourism boost.

(5) Help to grow for other big inter space mission. Many human.

(Eg) Mars

Hum, need proper research and investment to expand market and succesfully complete project.

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 क 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 is efficient, effective, having high calorific value and scope of expansion.

Hence, called as silver bullet in our quest to tackle Climate Change.

National Green Hydrogen mission Significance and Potential

(1) Clean energy: as hydrogen gas by product is only water & heat.

(2) Energy transition: will be easy in backdrop of climate crisis.

(3) Diversifying energy basket. away from Coal & Crude dependen.

(4) Reduce Import dependence: by domestic production.

(5) Promote Sustainable Urban development by clean Hydrogen public transport

(Eg) Hydrogen Bus in Delhi

Candidates must not write on this margin

Challenges

1. Presently we use coal based energy to produce hydrogen ∴ GHE
2. Risk of transportation of Hydrogen highly inflamable
3. Cost intensive project needs investment.

Way forward

1. Promote FDI.
2. Promote technology transfer.
   - Eg MOU with Germany
3. Global Collaboration in Multilateral institutions
   - Eg COP-27 Green hydrogen

How, It will help India in energy security along with realising SDG 7 goal of Clean 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, Joshimath we saw large scale land subsidence and distruction to infrastructure triggered by seismic activity.

Key lesson for disaster Managed and Conservation Env. Himalaya :

(1) Himalaya are techtonically activ and ecologically fragile needs sensible mangemet.

(2) ~~Re~~ Promote sustainable tourism,

(3) Reduce & population concentration in sensitive himalaya.

(4) Ecologically sustainable building construction

(5) less use of high vibration instrument and Vehicle

(Eg) Buses, trains

Candidates must not write on this margin

(6) Reduced Mining activity

(7) Sustainable road Construction

(8) Proactive Disaster preparedness on lines of Sendai framework.

(9) Sustainable himalayan initiatives needs to be promoted.

(10) We need to adjust according to nature because nature is mightier. Dor not hamper nature.

(11) Low heavy projects like hydrological dam and reservoir

(12) Seismic mapping of himalaya

(13) Use of satelite to trace plate movement

(14) Research in Seismology and plate techtonics.

Thus, we need Sustainable and planned developmt to realise co-existance with nature by implmtg Sendai Framework.

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

Recently, Khalistan flag was hoisted in UK showing increasing Khalistan issue

Recent developments

(1) Massive protest and law and Order breakdown ~~to Stop~~ against arrest of Khalistan Supporter in Punjab 2023.

(2) Flag hoisted outside Indian embassy in UK.

(3) March and slogans towards Support of Khalistan in Canada.

(4) Promotion of Khalistan Post via Social media based in Pakistan

Candidates must not write on this margin

Measures to tackle

① Developmental approach : to address the unemployment and marginalisation.

② Law and Order approach : to crackdown on supporters who challenge national security & integrity

③ Banning passport of Indian supported in foreign countries

④ Bilateral diplomacy with countries like Canada & UK to suppress anti-India voice.

Now, needs proactive approach to tackle this secessionist and radical trends for proper National security.

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

Recently, more than 50 incidents of drone surveillance from Pakistan was intercepted in Border.

Anonymity & Ease of drones

(1) Due to remote operation

(2) No trace of human life threat.

(3) Can be of multi use like surveillance, attack.

(4) Battery operated hence, no connection.

(5) Small in Size hence reduces chance of detection

(6) Escapes radar due to low vibrations.

(7) Threat of drug traffic and arms trade - infiltrators

Candidates must not write on this margin

Measures to tackle

(1) CIBMIS: use of technology & Human in combination

(2) Satellite surveillance

(3) Lazer border security

(4) Anti drone aircraft and nets

(5) Strong & sensitive radar

(6) Doppler Radars in all area.

(7) Jammer of radar through high frequency

Thus use of technology to counter technology & effective 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

Recently, Electricity Amendment Bill 2022 was brought to rationalise and streamline electricity tarrif along with energy conservation

Advantages for various section

① **Consumer**

ⓐ Rationalisation of electricity tarrif.

ⓑ Reducing cross subsidy.
This will make business more lucrative

ⓒ Better service to consumer due to reduced monopoly ~~of~~ of government Discom and coming up of private sector expertise.

eg Adani Power.

② **DISCOMS**

ⓐ More scope for revenue generation and better pricing.

ⓑ Reduce ~~fro~~ Cash Crunch and promote revenue flow.

Candidates must not write on this margin

(c) Private Sector can enter large market
(d) More scope for fund generation and loans leverage.
(e) Reduced AT&C losses will make more profit.
(f) Renewable energy focus will increase option to procure and decrease dependence on Govt company.

(3) Environment

(a) More scope to expand renewable energy market by bringing Solar and mix energy in ambit.
(b) Reduce Green house emission by reducing dependence on coal based thermal power plant.
(c) Diversification of energy mix.
(d) Reduce ~~atom~~ & air pollution by reducing coal transport which causes soot in air.
Eg Delhi pollution.
Dhanbad - top 5 air polluted city.

Candidates must not write on this margin

Short comings

1. ~~Did~~ Did not adress historical backlog of loans.
2. Depends on states to implemnt as it is State subject.
3. Slow progress of Smart metering
4. Still AT&C loss is large @ 16%. ~~down~~ world average 5%..

Measures to overcome

1. Adress historical dificit of loans by reconstruction & modifying old loans
2. More fiscal space for spare for fund generation
   - (eg) Green Bonds.
3. Reduce AT&C losses.
4. Smart metering in all household.

It will help realise SDG 7 goal of Clean energy alog with SDG 13 of Climate change.

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 is a regulatory body of Stock exchange ~~created and~~ Got Statutory status on 1992 through SEBI Act.

Role in regulating share market

(a) Streamline process for entry of new companies.

(b) Oversight on wrong practices.

(Eg) Insiders trading.

(c) Oversee the health of company & advices steps to recover.

Safeguarding interest of investor

(a) Short lock (shorting) of market when sudden rise or fall.

(b) Guidlines for Boad of directors.

(Eg) Narayan Murthy Comittee.

(c) Stringent norms to avoid company failure and awareness generation.

Candidates must not write on this margin

Challenges faced by SEBI

① large no. of investors: due to rising ~~and~~ of small & investors.
Eg In last 5 yrs demat account doubled.

② Technology: advancement leads to evasion of norms and wrong practices
Eg Nirav Modi SWIFT Account.

③ Awareness: among new investors especially lower profile against wrong practices.

④ Insiders trading: is hard & difficult to detect.
Eg Chanda Kochar ICICI issue.

⑤ Manipulation: of share prices ~~from~~ scrutiny needs strong investigation wing
Eg Harshad Mehta Scam.

⑥ low manpower specially technically skilled manpower to address challenges.

⑦ Hot Money: in form of FII make market volatile.
Eg 2022 - highest FII investment.

Candidates must not write on this margin

Reforms in this Regard

(1) Narayan Murthy Comitte recommendations on Corporate Governance. Implimentation.

(2) Use of technology : like AI and Big data to trace manipulation of shares.

(3) Awareness : to small investors.

(4) Independent directors : stringent norms and implementation of rules.

(5) Deeper Bond market.

(6) Reduce excessive compliance and streamline registration.

eg Uday ~~Kotak~~ Comitte recommendations

(7) Expand market for foreign investors.

Hence, SEBI can play important role in reality $5 trillion economy and Vibrant India.

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

Recently, during COVID agriculture sector was only sector which has shown growth and reduced Indian economy downfall.

Major contributor to economy

1. Share: in GDP is around 18%.
2. Employment: to more than 40% population.
3. Food security: adressed by productivity
   - Eg Green revolution
4. Food processing industry: is founded on agriculture sector.
5. Rural economy: main engine of Growth

Constraints that impede growth

(A) Backward linkage:

1. Poor seed replacement and quality.
2. lack of Credit.
3. Fragmentation of landholding
   - Eg 1.15 hectare → 86% population

Candidates must not write on this margin

(B) Forward linkage

(1) low price realisation due to poor MSP regime and most product out of MSP → only 22 crops in MSP.
(2) low Cold storage facility.
(3) low e-NAM penetration.
(4) low Food processing development.

Role of technology in overcoming constraints

(A) Backward linkage

(1) Seed: Can be modified by GM seeds
Eg BT Brinjal.
(2) Credit: can be automated and streamlined by Digital Credit Repository
(3) Land fragmentation & can be addressed by technology like Vertical farming and aquaponics.
(4) Pest control: by better pest management
Eg tracing by satellite.
Spray by Drones.
(5) Irrigation: by technology like drip irrigation, sprinkler irrigation

Candidates must not write on this margin

(B) Forward linkage

(1) Reduce loss: by better technologically strong storage and Mandi.
Eg Real time data of store.

(2) Cold storage: Can adress crop loss.

(3) Irradiation technique: Can increase shelf life.

(4) Drones: can be used for online delivery of products.

(5) Deep freeze trucks: for efficient transportation and shelf life

(6) Drought tolerant: seeds to adress drought and pest attack.

(7) Diversification: of food basket by hybrid seeds.

(8) Fortification: to adress nutritional issue

Hence, use of technology can be used to double farmers income as said by Ashok Dalwai Committee on use of GM and technology.

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

55% of Indian agriculture lands are irrigated rest are rainfed.

Impact of irrigation on environment and natural resources

1. Ground water exploitation: by over exploitation by farms.
   - Eg ~~70%~~ 89% Groundwater used in agri.
2. Salinisation: due to wrong irrigation practices.
3. Soil erosion: due to flood irrigation.
4. Contamination of ground water by wrong practices.

Measures for sustainable and equitable agriculture

1. Drip irrigation: to reduce loss of water.
2. Sprinkler irrigation: to efficiently use water.

Candidates must not write on this margin

(3) Use of tensiometer: for scientific use of water.

(4) Fertigation: to adress issue of contamination by controlled Fertilisers

(5) Changing wrong practice to sustainable

(Eg) Flood irrigation.

(6) Climate specific agriculture.

(Eg) Rice where surplus water.
Millet when water defict.

(7) Rainwater harvesting: to collect runoff of rains.

(8) Terrace farming in hilly areas.

(9) local technique of rainwater conservation.

(eg) Contour bunding.
Ahar Pynes in Bihar.
~~Bamboo~~

(10) Use of GM crops like drought tolerant seeds.

Candidates must not write on this margin

(11) Decentralised water conservation
(Eg) Bamboo irrigation in North east.

(12) Rationalising electricity consumption and tariff. & promotion of technology
(Eg) KUSUM.

(13) Promote contour bunding.

(14) Use of AI and satellite to irrigate what is required not excess.

Here, water conservation is crucial to ensure food security and sustainable agriculture.

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

India has always been land of scientific temper from ancient time like Aryabhatta to recent like Homi Bhabha and Vikram Sarabhai.

Strategic benifit of Homi Bhabha work

(1) Defence: self reliance atomic Bomb.
   (Eg) Operation Budha.

(2) Energy security: 3 tier nuclear program.
   (Eg) Narora Plant (UP)

(3) Health: by creating cancer treatment via radioactive therapy
   (Eg) Cobalt-60.

(4) Self reliant nation: in atomic and nuclear plant.

(5) Use of indegenous resource: like

Candidates must not write on this margin

large scale monozite sand in Nuclear program.

Eg 3rd Stage Use.

6. Net Security Provider : In Indian Ocean

Eg Nuclear triad

Stratogic benifit of Vikram Sarabhai work

1. Defence : Use of missiles and dual use technologs from space industry.
2. Space : leading power in space

Eg A-Sat satelite.

3. Expost : of space products and services.

Eg ANTRIX comercial wing of ISRO

4. Scientific exploration : like Mangalyan Gaganyaan., Mars Mission

Candidates must not write on this margin

(5) Strategic use: of satelites

(Eg) Defene satelite.

(6) Resource Mapping: theugh satelite of S & R - band spectroscopy.

(7) Drsaster: theugh satelite like Synthetic aperture radar satelite.

(8) Urban planny & Managent:

(Eg) Indegenous Geopositios locatio.

NAVIC.

Hence, they are of great service to nation and front runners to realise Indias Goal of Atmnir bhar Bharat.

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

Recently, Elon Musk said that AI can be double edge sword, even danger than Nukes.

Potential for Push boundaries of innovation

(1) Economy: Centre to 4th Industrial revolution.

(2) Commerce: AI can solves complex supply chain algorithm.

(3) Science: AI can solve and predict complex answers.
(Eg) Black hole Image via AI.

(4) Customised solution: to customise according to needs. via AI generative tool.
(Eg) Chat Gpt.

(5) Software: Generative AI can solve and create new algorithm according to need.
(Eg) BARD

Candidates must not write on this margin

(6) Education: help students to grow academically and solve complex problems.

Eg Chat GPT for Projects

(7) Research: papers and streamlined and productive reports generated.

Societal Impacts challenges

(1) Students: will less use their analytical skills and more rely on generative AI.

(2) Software developer: will not use his creative thinking to create innovative solution.

(3) Human resource: will be more technological slave and less critical thinking.

(4) Ethical decision making: during ~~Conflict~~ Ethical dilemma and conflict of conscience not addressed by Generative AI.

Eg BARD suggested to murder criminal many people

Candidates must not write on this margin

(5) Creative thinking: Of society will reduce due to increased dependence.

(6) Healthcare: using generative AI has elite access, will increase rich poor divide.

(7) Rural Urban divide: to technology access and infrastructure.

(8) Digital Illiteracy: of large population

(9) Privacy: Issue is of huge challenge due to great potential of AI.
(Eg) Privacy part of fundamental Right

(10) Have and Have nots: in domestic and Global level.
(Eg) North-South divide.

Ways to address

(1) More accessible, equitable.
(2) Address concern of privacy & Data location
(3) Government Guidelines to regulate
(4) International collaboration (Eg) G20.

Thus, Generative AI can be used as virtual tool revolutionising 4th Industrial revolution

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

Recently Mangroove alliance was launched in COP 27 to adress issue of Climate change.

Purpose of Mangroove alliance

(1) Disaster management: to adress issue like Cyclone, Tsunami, ~~coast~~ etc.

(Eg) Mangroove acted as barrier in 2004 Tsunami.

(2) Coastal erosion: adressed by reduing speed currents.

(3) Ecology: Mangrove are one of the rich biological hotspots of world

(4) Wildlife conservation: due to complex and ~~best~~ unique species

(Eg) Bengal tiger.

(5) Global Collaboration for conservation

(6) Technology transfer among countries

Candidates must not write on this margin

Importance of Mangroves in tropical areas

(1) Tropical cyclones: like Yaas, Taute are common. and mangroves act as barrier.

(2) Tsunami: effect can be reduced

(3) Medicine: plants unique in Mangroove. help adress disease.

(4) Filteration: of contaminated water.

(5) Ecological conservation: by creating of Biological chain prod
(Eg) Sundarban.

(6) Tourism: promotion like boating.

(7) Coastal erosion: is reduced by reducing current.

(8) Fishing ground: due to mix of freshwater & Saline water.

(9) Ecological services: like watercycle and nutrition cycle.

Candidates must not write on this margin

Challenges

1. Encroached by humans
2. Damage due to extreme weather
   - Eg: Hud Hud Cyclone damaged Mangroves.
3. Unsustainable tourism.
4. Trafficking of animals and plants to India for ~~tourism~~ infiltration
   - Eg: Bangladesh Mangroves

Hence, Mangroves are essential for Blue economy and realise SDG goal of 14 coastal and life below water.

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

India lead the initiative of Coalition for Disaster Resilient Infra (CDRI) in Conference on Climate Change.

Brings Robustness in Disaster Managed (DM)

(1) Infrastructure: are resistant to disaster like Earthquake.

(2) Building Codes for residents
   (Eg) Grih Samhita of India.

(3) Funds: for resilient housing and infrastructure.

New Strategy to tackle Disaster: Need

(1) Old strategy not working to adress disaster.

(2) lack of Funds: to adress huge cost of project which are resilient.

Candidates must not write on this margin

(3) Global collaboration: was missing to address collective effort.

(4) Technology Sharing: was in silos, no platform to share together.

(5) Best Practices: of all countries at one place.

(6) Indegenous knowledge: sharing an integral part of projects
   (Eg) Bamboo Shelter of North east.

(7) Frequency: of disasters has increas

(8) Climate Change: is complex and no one nation can alone tackle it.

Challenges

(1) Slow progress since its inception

(2) Expensive: Infrastructure toward disaster resilient

(3) Funds: pooling has been bottleneck of Climate negotiations.

Candidates must not write on this margin

(4) Retrofitting: of infrastructure needs to be done quickly and Urgency.

(5) To Issue of Access and Benefit Sharing

Way forward

(1) All new project on CDRI guidline

(2) Funds: for small Island nations.

(3) Collaboration technology Sharing.

(4) Adhering to Sendai Framework on Disaster Risk reduction.

Disasters needs a collective effort and multi'pronged strategy to realise Sendai Goals of 2030.

Candidates must not write on this margin

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

(250 शब्दों में उत्तर दीजिए) 15 अंक

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

(Answer in 250 words) 15 Marks

Recently, During COVID Cyber attacks have increased 2-5 times pre covid level.

This highlight urgent need for Cybersecurity measures.

Need

(A) Critical Infrastructure

(1) They are critical for overall functioning of nation.

(Eg) Railways.

(2) They have implications in other sectors & spill over effect.

(Eg) Banks

(3) National security issue due to sensitive information.

(Eg) Defence infrastructure.

Candidates must not write on this margin

Major Corporations

(1) Centre of Business activity.
(2) Affect overall economy.
(3) Large number of Data of Consumers
   (Eg) Dominos ~~data~~ data leak.

Key factors for increase attack

(1) Hostile neighbour: It was reported that most attacks were from China based Servers.
(2) 4th arena of warfare: to tackle and crumble enemy nation.
   (Eg) Stuxnet in Iran.
(3) Foreign equipments: dependency of India, ~~on~~ which can be used as surveillance.
   (Eg) 5G Huwaii.
(4) low security awareness: among citizen and corporation.
(5) localisation of data: not available.
(6) Poor security infrastructure.
(7) low skilled Manpower.

Candidates must not write on this margin

Impact on various Sector

1. **Defence**: can be compromised.
   - Eg Stuxnet attack.
2. **Trade**: are dependent on digital infrastructure
   - Eg BSE, NSE.
3. **E-commerce**: mostly operate in digital space. Eg Amazon.
4. **Privacy**: of citizen, Data leak.
5. **Health**: Infrastructure are digitalise
   - Eg Ayushman Bharat.
6. **Education**: Promoted via online e.
   - Eg SWAYAM, MOOCS.
7. **Banking** are transitioning toward online mode Eg UPI.
8. **Agriculture** is being digitalise Eg E-NAM
9. **Governance** through online means will be affected Eg GeM.

All these sectors needs robust Cybersecurity infrastructure. Hence, need to implement **Gulshan Rai Committee** recommended of **self reliance** and **domestic infra**.

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

Ministry of Home Affairs, defines Border Management as securing nation borders along with promoting easy access to trade and Commerce.

Improve of Co-operation & Coordination among agencies

1. Single Ministry of Border management.
2. Joint training and drills.
3. National Security Architecture to link all agency. Eg NATGRID.
4. One Border one Force approach.
5. Joint collaboration with Border Police and defence personel.
   Eg Manipur Police & defence tussle.
6. Joint collaboration & drill & MOU with neighbouring country
   Eg MOU on border Managed with Bangladesh

Candidates must not write on this margin

Effective & Efficient Managent of Border

(A) Coastal Border

(1) Defined role, bourndaries and responsibility of:
   a) Border Police
   b) Coastal Security
   c) Navy.

(2) Joint intelligence sharing thrugh platform like NATGRID.

(3) Joint Patrolling drills.

(4) Use of fisherman as eyes & ears of security forces.

(5) More patrolling boats.

(6) Use of technology like Radar sensor, Satelite foacing.

(7) Survaillance for white Shipping.

(8) Strengthen Post Infrastructy and surveillance.

(B) Terrestrial Border

(1) Inter agency co-ordination via joint command and control.

Candidates must not write on this margin

(2) Use of technology like.
BOLT QID in Bangladesh

(3) CIBMS for complementary manual and technological asset.

(4) local community involved and confidence building
(Eg) Border HAAT project.

(5) Build Infrastructure along Border.
(Eg) No environment clearance for Border infra in 100 km range.

(6) Strengthe BRO and increase its procurement limit to ₹100 Cr.

(7) Integration of Army and Paramilitary intelligence with RAW and IB.
(Eg) NTRO.

Thus Border Security is essential for National security needs proactive approach, Hence, Implement Gulshan Rai Committee recommendation.

Candidates must not write on this margin

Space for Rough Work

