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NEXT IAS

(To be filled by candidate)

Code : TC603

Name of Candidate : AYUSH MANI CHAUDHARY

Roll No. : 0821859

Registration Number : MT23ATRA004 Date of Examination : 03/08/'23

Exam Centre : Old Rajinder Nagar ☐ Bhopal ☐ Online ☑

MTS Alternate Test-3 : 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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Question paper will be provided separately and can be taken by the candidates after conclusion of the exam.

.....

SUBJECT/PAPER
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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

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MACRO COMMENTS

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1. Read the Instructions on the cover page and strictly follow them.
2. Write your registration number and other particulars, in the space provided on the cover of QCA Booklet.
3. Write legibly and neatly. Do not write in bad/illegible handwritings.
4. For rough notes or calculation, the last two blank pages of this booklet should be used. The rough notes should be crossed through afterwards.
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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

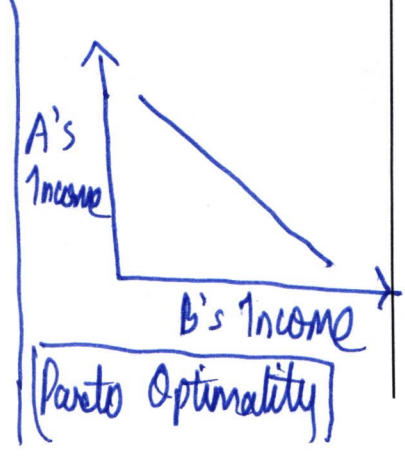
Windfall taxes are the taxes levied on a particular commodity which has witnessed a sudden excessive profit in the recent times.

Windfall Taxes → Redistributing Income / Economic Equality

(1) Taxes ensure the socialistic principles ⇒ not excessive profit accumulation by a single company.

(2) It ensures redistribution of income as taxes ensure greater earnings ⇒ more revenue for the government ⇒ more corpus for welfare scheme.

(3) It ensures the welfare idea of "Pareto Optimality"
⇒ increasing betterment of some at worsening-off of others



Pareto Optimality

(4) It ensures equivalent distributions of resources (A & B)

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(5) It ensures stability in the market by managing the supply - demand chain ⇒ better for poor people
(Eg) Recent Windfall taxes on petrol

Issues with Windfall Taxes →
(1) Low capital accumulation with the firms ⇒ less money to spend on welfare of employees ⇒ low income redistribution
(2) Lesser effective profits ⇒ low CSR spendings ⇒ low income equality
(3) Acts as a negative externality for the companies

Thus the Windfall taxes ensure normalization of the "Gini Coefficient" by effectively helping in income redistribution.

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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

Monetary Policy Committee (MPC) is a 6 member body having effective absolute veto from both the government and RBI and is mandated with the task of deciding benchmark policy rates.

Sucess of Inflation Targetting Under MPC

→ (1) Waning away phase of COVID pandemic ⇒ better demand - supply chains.

(2) Rise in output of key industries like solar, Lithium-ion.

(3) Increase in number of Industrial Labourers after reverse migration of 2 years ⇒ better industrial productivity

(4) Booming of startups (>15000 in 2021) ⇒ better economic perspectives.

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Challenges of MPC

→ (1) Geopolitical crisis (Russia-Ukraine) ⇒ issues of investors in domestic economy.

(2) Supply chain issues, especially in key areas like crude oil.

(3) Lack of key minerals like Lithium ion, Rare Earth Metals ⇒ hampering demand side

(4) NPA issues ⇒ challenges with decreasing the repo rate

Thus, the new MPC regime will have some imminent challenges before itself. But adopting a progressive outlook and continuous review of the economic indicators will help in better estimation of benchmark policy rates.

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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

Millets are a group of food grains that exhibit similar properties in terms of cultivation as well as nutrient properties.

Benefits of Millets → Sustainable Agriculture / Food Security

(1) They can be easily cultivated in dry land regions (22% of NSA) by minimal irrigation via rainwater.



(2) They can help in lower ground water utilization
⇒ promoting sustainability in agriculture.

(3) They can complement the issues of wheat / rice supply shocks in the PDS grains distribution.

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(4) They have high nutrition ~~fortitif~~ fortification like Vitamin B12, folic acid => ensuring quality of food grain

(5) They have high glycemic index => better nutritional properties for diseases like diabetes.

Issues with Millets

-> (1) Low agricultural productivity => average of 700kg/hectare against 3000kg/hectare of wheat/rice

-> (2) Issues of MSP => lack of farmer adoption.

-> (3) Low awarness and agricultural extension services in millets.

Millets or "Sree Anna" pose multi pronged benefits for India and is essential for ensuring SDG 2 => combating hunger and malnutrition.

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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.

(Answer in 150 words) 10 Marks

Jal Jeevan Mission was launched in 2019 in order to provide tapped household water connections with an average water capital of 55 L/person/day.

Jal Jeevan Mission ⇒ Potentials / Significance

1. **Ending Regional Disparity** by ensuring tapped water connections in water stressed regions of Deccan plateau, Thar Desert Region, NE India.

2. **Ensuring Availability** of drinking water by augmenting the sources of water ⇒ water recycling, water conservation, sustainable groundwater extraction.

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(3) Ensuring Accessibility of water by providing tapped water connection, especially in rural areas (JJM (rural)), Aspirational Districts, etc

Underlying Impediments in JJM →

(1) Limits on the available sources especially in drought prone regions

(2) Receding water table ⇒ low availability

(3) High capital investment especially in rural areas

(4) Low acceptability by public especially in backward regions

JJM has immense potential and benifits and above issues must be dealt by policy interventions to ensure SDG-6

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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) are certain specified types of battery developed for the purpose of storing large amounts of energy.

Applications of BESS

1. It can store the DC power obtained from capturing solar energy.
2. It can store power in lithium ion batteries => increasing lithium demand and manufacturing.
3. It is helpful to act as an energy source to far off inaccessible regions like Thar Desert
4. It is essential in regions like transport sector, industrial sector.

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Revolutionizing The Energy Program of India

→ (1) Essential for meeting the Renewable Energy targets of Paris Agreement.

(2) Increasing the mix of energy by diversifying sources

(3) Reduction of reliance on coal

(4) Meeting Panchamrit Principles like 500 GW of renewable energy, reducing carbon intensity of GDP by 45%, etc

Thus, the BESS has immense potential for ensuring energy security and key issues like low supply and technological development must be dealt with effectively.

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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 is visualized for manned space explorations of the region beyond the exosphere of the earth.

Developments in Gaganyaan

1. Sending of 3 people in the outer space.
2. Ensuring gender justice => 1 woman in the mission
3. Capability already tested by sucessful launch of Chandrayaan-III
4. Development of SSLV module for launching the Gaganyaan
5. Extensive training modules for the astronauts.

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Challenges of Gaganyaan

1. Technological configuration of every mission module.
2. Safety considerations as contains the issue of human life (A21)
3. Issues with the capability of SSLV.

Benifits of Gaganyaan

1. Better space exploration by human verification
2. Better for future manned missions
3. Developing better modules of EOS (Earth Observation Satellites)
   => Disaster Management, Weather Monitoring
4. Geopolitical Soft Power.

Thus the Gaganyaan Mission has multi-pronged benifits and the technical issues must be resolved for the above reasons.

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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

Green Hydrogen is the hydrogen produced when the electrolysis of water happens with the help of green energy sources like solar, wind.

National Green Hydrogen Mission → Significance

(1) Production of 125 GW of renewable energy generation capacity by 2030

(2) Production of 5 MMT of green hydrogen annually by 2030

(3) Sequestration / reduction of carbon in the atmosphere, amounting to 50 MMT.

(4) Diversifying the renewable energy mix of India.

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(5) Reducing the dependence on coal ⇒ fulfilling the Paris Accord.

(6) Incentivizing and decarbonizing essential sectors like transportation.

Issues with NGHM →
- (1) Low technological development
- (2) High capital investment, especially at the commissioning phase
- (3) Low cost of thermal energy ⇒ lack of shifting acceptance by industries.

The Union Govt has recently launched the above NGHM with an outlay of ₹ 19,000 crore and this is very much essential for ensuring environmental sustainability.

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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

Recent Joshimath disaster happened due to subsidence of land (ground stratum), causing widespread cracks in many buildings.

Key Lessons in Himalayan Region

(1) Disaster Management

→ Ensuring proper post disaster mitigation of crowd by providing rehabilitation according to the NDMA guidelines.

→ Proper risk assessment of the region

→ Reliance on previous reports like Mishra Committee said Joshimath is built on a Moraine

→ Ensuring disaster risk governance of the fragile slopes.

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→ Involving experts / disaster management techniques in Urban planning.

(2) **Environmental Conservation**

→ Building energy plants like the NTPC plant in Joshimath by proper assessment.

→ Planned infrastructure development by ensuring environmental sustainability, like rampant deforestation in Joshimath.

→ Slope sustainability by ensuring methods like slope grouting, embankment construction.

Thus, the fragile Himalayan region needs to learn key lessons from the recent Joshimath disaster to prevent future such issues in the region.

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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 recent spark in Punjab region shows the rising simmering discontent in the Punjab region.

Recent Radical Trends in Punjab

→ (1) Rise of extremists outfits like 'Waris Punjab De' to promote youth radicalization

(2) Rise in geopolitical uncertainty due to rising Khalistani demands in US / Canada.

(3) Recent attacks of Indian Embassy like in UK.

(4) Rising drug trade via the Golden Crescent (Afghanistan - Pakistan - Iran) ⇒ fuelling the extremists.

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Measures to Handle the Situation

1. Ensuring rapid force deployment, especially Paramilitary in Key hotspots.
2. Checking on the border regions of drug trade, human trafficking
3. Increasing welfare infrastructure in the hotspot regions => schools / hospitals => building Public trust.
4. Ensuring public awareness generation
5. Augmenting the agricultural sector by MSP hikes, irrigation subsidy => gaining public welfare.

The recent sparks do not amount to the previous sparks like in 1980s but it should be controlled at the initial stages itself.

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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

Drone, or the UAVs are lightweight flying instruments that have caused imminent issues in the border areas in recent times.

Issues of Drone in Borders Areas

1. Lack of detection, especially micro and mini drones (weighing < 1 kg).
2. Usage of drones to detonate IEDs in border areas.
3. Supplying essentials to terrorists in the border areas.
4. Issues of drug trade in the border region.
5. Act as a messaging/communication source across borders.

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Suggestions to Tackle Drone Problems

1. Holistic implementation of Drone Regulations 2021 => Red zoning of the border regions.
2. Issuing penal guidelines for the drone users in border.
3. Increasing airfield surveillance by satellites like EOS.
4. Training modules of BSF jawans related to airfield surveillance.
5. Upgradations of technology in border areas by virtue of Border Area Development Program (BADP)

Ensuring borders security by controlling drone operations is essential for the security of border regions in India.

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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

The Electricity Amendment Bill was brought by the Union government to resolve the inherent issues in the power sector.

Benifits of the Energy Amendment Bill, 2022

(1) Benifits of Consumers

- Availability of energy from incentivized renewable energy sector ⇒ better pricing
- Lower shortfalls of energy by increasing the net energy output
- Reducing pollution due to renewable energy generation ⇒ health benifits

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(2) **Benefits for DISCOMs**

- Increasing carbon credit ⇒ better earnings by generation of renewable energy
- NDC targets ⇒ ensuring carbon trade ⇒ profits for DISCOMs

(3) **Benefits for Environment**

- Reducing emission intensity of the GDP by around 33% ⇒ sustainability.
- Renewable energy generation ⇒ low incentives for thermal energy.
- Solar energy / wind energy ⇒ lesser pressure on the environmental resources.
- Fulfilling Paris Accord and Panchamrit Principles

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Shortcomings in the Bill →

1. Lack of clear cut guidelines on the carbon credit system
2. Lack of technological upgradation for energy generations like hydrogen energy.
3. High capital investment due to high thermal energy reliance of DISCOMs

However, despite the above shortcomings, policy measures like → increasing private sector participation

→ incentivizing renewable energy like NGHM.

→ Capacity development

is essential for ensuring viability of the Energy Amendment Bill.

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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 statutory body mandated for ensuring robust functioning of the security markets of India.

Role of SEBI →

1. Monitoring of Market via taking cognizance of stock market trading at current basis.
2. Penalizing of stock market rules violation by strict monitoring
3. Keeping limits / checks on trading via mechanisms like market func to stop transactions if too much bull / bear transactions are happening.

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Significance of SEBI

(1) **Market Regulation** by monitoring the current status of stock availability, transactions.

(2) **Market Reforms** after scams like Harshad Mehta, Ketan Parekh.

(3) **Protection of Investors** by a set of rotative guidelines and trading rules.

Challenges faced By SEBI

(1) **Market Volatility** due to disproportional growth of different sectors

(2) **Geopolitical Uncertainty** fuelling investors risk.

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(3) **Supply Side Crisis** making low growth of key sectors of industries.

(4) **Stock Market Crisis** like recent reports by short seller Hindenberg ⇒ loss to the investors as well as companies.

The SEBI is the apex body for stock market regulation and is facing imminent challenges which can be resolved by measures such as → increasing surveillance of the companies

→ improving supply side issues for companies

→ Countering allegations of corruption by vigilance

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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

The agricultural sector is the major employment provider to more than half of the population, but has been plagued by certain issues.

Issues in Agricultural Sector

(1) Low agricultural growth (stagnating at around 4%) over the past decades.

(2) Low public / private investment, especially in low productivity regions.

(3) Small (1-2 hectare) and marginal (< 1 hectare) comprise 86% of total land holding => low productivity.

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(4) Females comprise 71% agricultural labourers by land ownership only 13% (ES 2018)

(5) High unsustainability ⇒ excessive fertilizers / ground water usage ⇒ land salinity / alkalinity.

(6) Climate change ⇒ fuelling low productivity.

(7) Disparity among crops ⇒ yield of rice / wheat ≈ 3200 kg / hectare, whereas pulses (800 kg/hect), oilseeds (1050 kg/hectare).

Role of Technology in Overcoming Issues

(1) Mechanization of agriculture (currently < 30%) ⇒ better productivity.

(2) Usage of soil health cards for proper N:P:K assessment of fertilizers.

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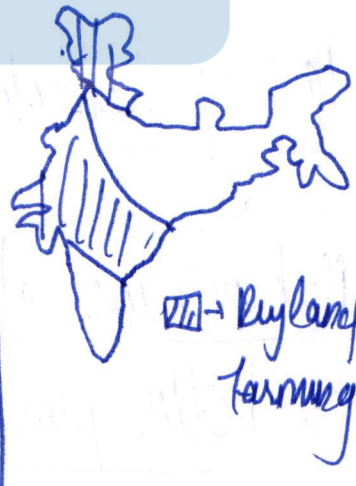
(3) Technology like nano-urea to decrease excessive urea usage / reducing bills.

(4) Providing infrastructure like cold storage facilities to prevent post harvest losses (currently around 6.6%).

(5) Organic farming / Zero Budget Natural Farming via Bharatiya Prakritik Krishi Paddhati.

(6) Modern methods of farming like metal tillage

(7) Promotion of dry land farming (22% of NSA) by Israel Method.



Thus technological interventions are essential for ensuring agricultural sector development and doubling farmer's income.

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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

Irrigation is one of the agricultural trinity (HYV seeds, fertilizer, irrigation) for ensuring the agricultural sector development.

Impact of Irrigation on Environment / Natural Resources

1. Receding of GW table, especially in West UP (Shamli, Agra).
2. Soil salinity / alkalinity leading to parched lands as in Punjab
3. Reducing water level on an average (Per capita availability was 5000 m^3 (1950) → 1700 m^3 (2020))
4. Loss of water for ensuring proper water / carbon cycle.

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Measures for Ensuring Sustainability of Irrigation

(1) Providing proper agricultural extension services for irrigation knowledge to farmers.

(2) Promoting dryland agriculture by cultivation of crops like millets.

(3) Revisiting of schemes like PM KUSUM which provide solar water pumps ⇒ reduces water availability during summers ⇒ positive feedback mechanism.

(4) Promotion of crops like millet which require lesser water - Eg) Bajra cultivation in Pali, Tonk, Sawai Madhopur (Rajasthan)

(5) Recharging of groundwater by building traditional structures like Nadi / Khadins,

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as effatively done in Barmer distrut by Cairns oil / Gas and Vedanta groups.

(6) Lesser focus on water intensive crops like rice / sugarcane / jute.

(7) Proper awareness programs for farmers.

(8) Rainwater harvesting.

Thus, irrigation sector faces imminent issues but conserving by above practices is essential for 5 trillion USD economy.

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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

Dr Homi Jehangir Bhabha and Dr Vikram Sarabhai were two pioneers of modern India whose contributions in respective fields provided the initial setup for future sectoral growth

Contributions of Dr. Homi Jehangir Bhabha

(1) Development of India's 3 way nuclear reactor programs :-

→ Stage 1 → Heavy Water Plants

→ Stage 2 → Thorium Based Plant

→ Stage 3 → Fast breeder Reactors

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(2) Development of nuclear energy ⇒ diversification of the energy basket.

(3) Geopolitical soft power in the field of nuclear energy generation.

(4) Development of nuclear energy despite Canadian support withdrawal after the "Smiling Buddha Test" @ Pokhrans.

Contributions of Dr. Vikram Ambalal Sarabhai

(1) Development / establishment of ISRO.

(2) Development of launch modules → PSLV / SSLV

(3) Development in the communication field due to satellite usage.

(4) Climate prediction via EOS satellites.

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(5) Development of the unique work culture of ISRO = effluent working at low operational cost, gender equality.

(6) Geopolitical soft powers in the field of space technology.

(7) Future development of missions like Chandrayaan.

Thus, the current grandeur of the nuclear and space technologies is set on the bedrock provided by these 2 gems of Indian motherland:

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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

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, as recently seen in Chat GPT holds power to generate answers by learning from the inputs of data provided by users all over the world.

Potentials of Generative AI

1. Increasing the domains of research
2. Providing holistic results to technological upgradations in various fields
3. Providing solutions to key industrial / service sector issues
4. A tool for monitoring the overall performance of the firm based on the past results.

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(5) Providing solutions to key sectors like transport, industries.

(6) Improving / augmenting the human capital by providing inputs.

(7) Ensuring a level playing field for all the competing firms.

(8) Processing of informations / mathematical operations at a faster rate.

(9) Improving AI interface at multi-pronged levels by combining texts / voice / image.

(10) Beneficial to provide technological innovations to the ~~developed~~ developing nations at low cost.

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Societal Impact of Generative AI

(1) Increases the lethargic behaviours in humans. Eg) Usage of Chat GPT for research purposes.

(2) Decreases social mobility of employees by reducing interaction as Generative AI serves as solution to all problems.

(3) Social issues of cyber security.

(4) Recent racial issues raised by discriminating nature among blacks/non blacks due to corrupt information feeding.

Generative AI has huge benefits for India and above issues must be governed by the provisions of the IT Act 2000.

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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" was proposal by UAE and Indonesia recently @ COP 27 to promote protection of mangroves globally.

Purpose of MAC @ COP27

1. Building global cooperation for mangrove conservation
2. Highlighting the importance of mangroves in fighting climate change
3. Highlighting rising mangrove depletion in key coastal regions
4. Utilization of mangroves in Disaster Risk Reduction.

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Importance of Mangroves for Coastal Ecology

1. Act as a natural barrier for tropical cyclones.
   Eg) Protection of Sundarbans from the recent Fani cyclone
2. Acting as an important ecology for plants like epiphytes
3. Promotion of brakish water ecosystems as mangroves have high salt water tolerance
4. Protection of coastal soil erosion by holding the soft coastal soil
5. Promoting different varieties of flora / fauna.
6. Importance for coastal tourism.

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Issues with Mangroves in Coastal Ecology

→ (1) Climate change → decreased Mangrove productivity

→ (2) Coastal sand mining by deforestation of mangroves.

→ (3) NITI Aayog recently highlighted receeding of Mangrove line inwards due to erosion.

Thus mangroves are very much essential for India as India houses a lot of mangrove hotspots like Sundarbans, Gulf of Khambat, that is why India joined the Mangrove Alliance for Climate.



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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 independent organization of nations, organizations like UN to promote sustainable infrastructure construction.

Importance of CDRI

(1) **Private Sector** participation to ensure the best practices in infrastructure construction.

(2) **Increased Funding** for sustainable infrastructure construction by market mobilization.

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(3) **Carbon Market** mechanism for ensuring decarbonization of key industries like cement

(4) **Best Practice Adoption** by nations worldwide, especially in developing nations.

(5) **Promoting Growth** of the infrastructure sector by ensuring robust supply chains.

New Strategy To Tackle Disaster → CDRI

(1) India host to a number of hazards like earthquakes, floods, tropical cyclones.

(2) 82% of Indias population is vulnerable to some form of disaster ⇒ infrastructure resilience very low (according to WB)

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(3) Issues like cracks in buildings in Joshimath due to land subsidence.

(4) Destruction of infrastructure like unplanned houses in Delhi NCR during earthquakes

(5) Promotion of sustainability against risks of floods, cyclones in key watershed and coastal regions.

CDRI is very much essential especially for nations like India to ensure SDG 1 - 9 => building sustainable and resilient infrastructure.

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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 attacks are threats to the cyber security space when the systems of users / organizations are hacked in demand for a ransom to free the system.

Rise In Ransomware Attacks → Low Protection

(1) Targetting users with low system protection measures and low digital resilience.

(2) Organizations like Dominoes have witnessed ransomware attacks at the cost of key user information.

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(3) Threat to the sovereignty and integrity of India :

(4) Targetting of key public infrastructure like health. Eg) Ransomware attack on Max hospital.

Key factors Contributing to Ransomware

→ (1) Low digital protection measures

→ (2) High anonymity of attacks ⇒ difficult to trace / track

→ (3) Rise of highly qualified jobless engineers ⇒ engaged in this field

→ (4) Low public digital awareness.

→ (5) Rise in number of active internet users by 20% after COVID ⇒ according to Symantec International Report

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Impact on Various Sectors →

① Threat to user information especially in key areas like healthcare.

② Low industrial output due to frequent attacks on system.

③ Hampering service sector growth due to hacking of systems.

④ Disturbs the common household users.

Ransomware attacks are rising and India has key agencies like CERT-In, NCIIPC, National Cyber Security Council, etc.

Also, the Digital Public Data Protection (DPDP) bill also adresses the above issues.

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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

The borderline of 15,200 km of India is exposed to a number of threats at the land, water and air domains which calls for effective coordination for better protection.

Management of Coastal Regions

(1) Ensuring cooperation between the Marine Police of the state and the Coast Guard.

(2) Promoting division of duties for dealing with inflow of terrorists, protection of fishermen.

(3) Providing common training modules to the stakeholders in this domain.

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(4) Enhancing vigilance of high seas by Indian Navy to foresee the rising Chinese assertiveness in the Indian Ocean Region (IOR)

(5) Development of warships, aircraft carriers and training / amenability of marine police, Coast Guard officials for its usage.

Management of Terrestrial Regions

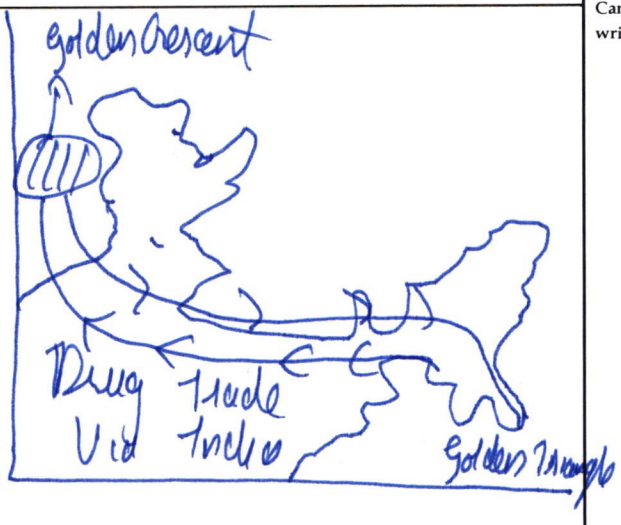
(1) Division of duties between the Army and the BSF.

(2) Managing terrorist cross border movement by effective coordination among stakeholders.

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(3) Managing drug trade as India lies between the Golden Crescent and Golden Triangle of drug trade



(4) Enhancing monitoring of the airspace by concerted efforts of army, air force, BSF as well as the agencies of Central Govt like CERT-In, ISRO.

Thus, the current border area protection demands multipronged actions from different agencies. Recent initiative of theaterization of Commands of all 3 armed forces is a welcomed step in this regards.