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Name of Candidate : Madhav Agarwal.

Roll No. : 6906479

Registration Number : PTTP 220590 **Date of Examination :** 4th August '23

Exam Centre : Old Rajinder Nagar ☐ Bhopal ☐ Online ☑

Test - 3 **Code : TC073**

MTS IGP Batch 2023

GENERAL INSTRUCTIONS

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

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

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

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

.....

SUBJECT/PAPER
GENERAL STUDIES

Invigilator's Sign. : .....

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(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

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MACRO COMMENTS

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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 is the direct tax imposed on the earning of assessees making supernormal profits due to external conditions

Recently, imposed on the petrochemical refineries who got access to deeply discounted Russian crude oil post Russia-Ukraine crisis.

Illustration:

Normally	Raw Material Price	Processing then Sales Price	Profit
Oil Barrel	$70-80	suppose $100/Barrel	$20~
Russia Ukraine crisis	$30-40/ per barrel	selling 100/B.	$60~

30 Growth of profits

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Effectiveness in redistributing wealth & economic equality

Yes

(1) High profits are taxed and collected by the government

(2) Used for relief to the customers.

(3) Progressive tax.

(4) Find other schemes for vulnerable sections

(eg: Gareeb Kalyan Yojana.

No.

(1) Short term measure only

(2) Challenges in computation due to varying rates.

(3) Global price rate affects overall tax potential

Windfall tax is a mechanism of short term. In long term, we need "shared growth" where all sections and sectors benefit.

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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) Regime began after recommendation of URJIT PATEL committee. It consists of 6 members 3 each from goverment & RBI, headed by RBI Governor. every 2 months.

Successes in inflation targeting:

(1) Inflation benchmark established & adhered 4% ± 2% CPI All India, largely followed.

(2) Transparency: due to strong & minutes.

(3) Outside 3rd party expertise has been brought through nomination.

(4) Adaptive approach of MPC = from

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pro-inflation post pandemic to an accommodative stance.

(5) No double digit inflation except seasonal/pandemic.

Challenges:

(1) The percolation of rates to bank has been slow.

(2) Tussle to manage between growth or inflation.

(3) Breach of 6% consistently during the COVID pandemic, lockdown, etc.

(4) Less ability to push growth as cannot affect supply ~~of money~~ side factors only demand.

To solve above RBI has been continously evolving and adopting global best practices via "UTKARSH" plan.

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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

The year 2023 has been declared as International Year of Millets which are regarded too as "WONDER GRAINS" by FAO.

(I) Potential of Millet Production

(A) Sustainable Agriculture

1. Reduced carbon and water footprints
2. Restoration of soil fertility, nitrogen.
3. Less use of pesticides.
4. Drought and pest resistant crops (climate smart).

(B) Improving food security

1. Tackling hidden hunger problem - lack of micronutrients
2. Tackle malnutrition (NFHS-5 Stunting at 35%) among kids, women.

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(3) Boost food productions and allow acces and affordable grains.

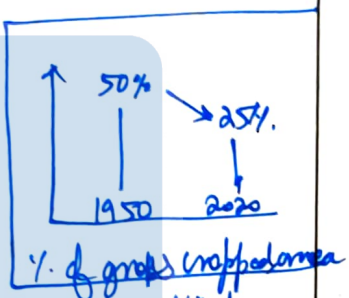
However, there are challenges making them an ORPHAN CROP:

(1) Low yield per hectare compared to rice and wheat.

(2) Low income to farmers as priced low.

(3) Lack of awareness - seen as poor mans food / coarse cereals.

(4) Poor food processing ecosystem for millets.



% of area cropped under Millets (ICAR).

Fig:

Way forward

→ Behavioral change and awareness via Millet fairs / Melas

→ Inclusion in MSP / PDS at national level (eg: Millets by Uttrakhand)

Best practices: Odisha Millets Mission.

Millets can be a tool to "climate smart agriculture" & "KUPOSHAN MUKT BHARAT"

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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 has been a flagship scheme of Ministry of Jal Shakti aiming for "Har Ghar Nal se Jal".

Objectives:
- Tap water connections to all households.
- Separate Rural (3 taps), Urban 1 (tap) features.
- Tackle water access issues & sustainable use.

SIGNIFANCE:

(1) Inclusive growth: where rural and urban areas have similar access.

(2) Tackle Time poverty for women: save long walking time to fill water.

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(3) Ensure health and nutrition : boosts ability to absorb nutrition.

(4) Ensure WASH : Water, sanitation & Hygiene.

(5) Compliment other schemes : PM Awas, Swatch Bharat.

Underlying Impediments :-

(1) Water as a state subject - call for a federal - state cooperation

(2) Difficulty in Identification of beneficiaries leading to delays.

(3) Poor capacity of local bodies to service regular water.

(4) May lead to unsustainable water use due to direct access to water.

The need for the hour is multi-pronged approach as well as centre-state partnership to achieve SDG6.

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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

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Battery Energy Storage Systems (BESS) are technologies that enable storage of energy through use of batteries for future usage.

Applications:

(1) Electric Vehicles: can have longer range of functioning to reduce 'Range Anxiety'

(2) Storage of excess renewable energy produced

(3) Remote areas: usage where there may no 24x7 supply access.

(4) Electronics sector: give an impetus to the sector by use in different appliances.

(5) Allow for "Battery swapping" in public transport
Eg: Used by Delhi Buses.

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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 aims at sending manned mission consisting of 3 people for 5-7 days at an altitude of 300-400 km

Developments of ~~Chandrayaan~~ GAGANYAAN:

~~Chandra~~

(1) Development of propulsion Module for orbit

(2) PAD Abort Test for recovery at Kochi with Indian Navy

(3) Plan to send 2 unmanned launch vehicles with Vyom Robot before manned launch.

Challenges:

(1) Training of astronauts: through Russian facilities

(2) Launch Vehicle: needs to be human grade with 98% success.

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(3) Health of astronauts:
- Mental health & isolation.
- Affect of micro gravity, rays can be damfue

(4) No previous precedent in recovery and re-entry

Benefits to society:

(1) Boost scientific temper, inspire young scientists

(2) Spin off effects: on other sectors like business, health, & education in long term.

(3) Boost national pride with success of ISRO.

(4) Employment generation and investments in the space sector.

(5) Detailed knowledge about affect of on human health in space, future prospects of space tourism.

Gaganyaan mission can be watershed mission and paint ISRO's colours worldwide with success.

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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 (1) and pollution (2)". Critically analyze the statement in light of India's National Green Hydrogen mission.

(Answer in 150 words) 10 Marks

Budget FY24 has launched Green Hydrogen Mission to create an ecosystem to extract ~~tggy~~ ~~tug~~ "hydrogen through renewable method"

Technology : Electrolyser is used to separate H_2 from air/water.

(I) Tackling climate change & pollution:

(1) Reduce the use fossil fuels: that has led to CO_2 levels past 400 ppm

(2) Hydrogen as an alternate fuel for energy intensive sectors.

(3) Burning & release of 'Green House Gases' would get reduced - causing health issues.

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(4) Aid as boost to renewables. - by allowing excess renewable power to be stored as Hydrogen fuel.

(5) Help in decarbonisation and achievement of Panchamrit Targets.

Hurdles in adoption:-

(1) Nascent technology and machines.

(2) Hight cost of Green H_2 as compared to energy from coal.

(3) Infrastructure: soft (professionals) & hard (grid infra, electrolysers) missing.

The sector needs goverment and private sector collaboration and handholding to boost energy security and achieve SDG 13.

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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

Joshimath in Uttakhand experienced land subsedience where the piece of land subsided due to natural & anthropogenic causes.

Key Lessons:-

(I) Environment Conservation:

1. Tourism based on ecological capacity of the area. (religious tourism)
2. Respecting the terrain of the place while planning infrastructure.
3. Controlling deforestation that make the land soil weak.
4. Allowing rain water to percolate

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through effective water capture.

(II) Disaster Management :-

(1) Need for disaster resilient infrastructure through use of technology.

(2) Need for community awareness and preparedness. (eg: Pillar Case Project by Red Cross.

(3) Infrastructure as per topography - avoid explosives, heavy dams, alleged NTPC plant that led to aquifer puncture.

(4) Need for Inter-agency coordination and balance Mitigation and ~~Prev~~ Adaptation.

(III) The incident has revealed the fragility of HIMALAYAS which must be factored in future plans.

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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

Attack on police station and rise of Amrit Pal Singh has brought the issue of KHALISTAN back to limelight.

Radical trends:

(1) Communal hate speeches given by several leaders of VARIS DE PUNJAB

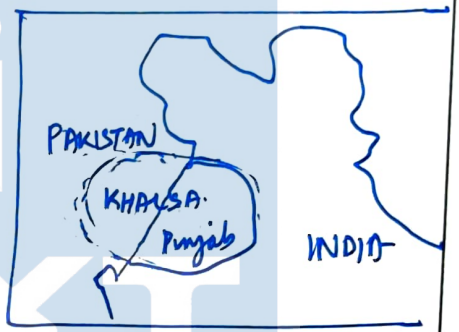


Fig: Khalistan hotspot and region

(2) Display of weapons in public spaces.

(3) Rise of 'Otherisation' and Identity politics.

(4) Role of External state (Pakistan) to boost Anti India Activities.

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(5) Continuation of ideology of Bhindarwalen and violation of Punjab Accord 1985.

Measures to handle it :-

(A) Security Preparedness:

(1) Infrastructure to police stations.

(2) Boosting intel collection and analysis.

(3) Balanced use of Central Armed Police Forces (CAPFs).

(B) Developmental:

(1) Balanced regional growth in long term.

(2) Diplomatic isolation on global stage to reduce efforts in Australia/ Canada.

(3) Confidence & trust building through use of dialogue for reasonable demands. (Ek Bharat Shreshta Bharat)

The role of constitutional approach is needed to settle disputes through "carrot & stick" approach.

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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

Drones operations have become rampant at border areas. These are remote controlled flying objects..

Eg: Drone Attack on Indian Air force Base in Jammu & Kashmir

Drone - Challenge for Border Security:

1. Delivery of drugs: across border & Punjab and J&K, difficult for radars to track
2. Supply of weapons: to cross border terrorist groups.
3. Target and undertake intel collection through surveillance.
4. Dual use technology = as used for

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both civilian & military usage

(5) Cheap technology : developing drones for less than $ 200 .

(6) Difficult to enforce punishment due to Anonymity

Measures taken

- Predator drones by Navy
- DRDO developed "Drone Kavach"
- Best practices from abroad.

Measures needed :

(1) Enforcement : of Drone Regulations (Green, Red zones).

(2) Investment in counter offensive drones.

(3) New technology to track drone movement is needed .

(4) Global cooperation : with Israel , USA to plan defensive offense.

The above steps needed on war footing to safeguard borders .

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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

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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 was formed under the SEBI Act 1992 as a statutory regulatory body for financial markets in India.

Role of SEBI

(A) Safeguarding Interest of Investors.

(1) Through policies, rules and measures for safe investment

(2) Ensuring full disclosure of investment related information.

(B) Regulation of share market.

(1) Quasi Judicial functions to impose fines on defaulters.

(2) Regulation of conduct of intermediaries like brokers, exchanges.

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(3) Listing / delisting of entities.

(4) Regulation of Other players like Mutual funds, Credit Rating Agencies.

Challenges faced by SEBI. :-

(1) Rapid growth: of financial markets specially post pandemic makes investors Vulnerable.

(2) Poor deepening of market: As per NITI Aayog; Only 2% households enter. Stock market.

(3) Conduct of players being illegitimate.
- ↳ Recent NSE Scam (Colocation scam)
- ↳ Karvi default (Broker)

(4) Delays in investigation of complaints due to poor capacity

eg: SAT imposed 10 lac penalty on SEBI for not following orders.

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(5) Unable to curtail speculative markets, insider trading - that reduce investor confidence.

Measures taken by SEBI
- T+1 settlement. (faster)
- Investor Protection & Education Fund (IPEF)
- Development of rules & regulations. Eg: for Credit Rating Agencies.

~~or acquisition~~

Measures:

(1) Global best practices: from IOCSO can be learnt by SEBI

(2) Investment in AI | Big data Analysis. to curtail frauds.

(3) Regular audits of stock exchanges, brokers through 3rd parties.

(4) Greater transparency & agility within SEBI.

(5) Deepen public engagement through awareness (IEC)

The financial markets play a crucial role in mobilisation of saving & role of SEBI becomes crucial.

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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 contributes to close to 18% to Indian Gross Value Added & employs close to 40% of Indian population, yet it is said to be an AILING SECTOR.

Expected → 4% expected growth

Actual → actual growth 1-2%

[AG: Agri-sector growth]

Constraints in Agriculture.	Role of Technology.
(A) Input Stage:	
(1) Poor quality of seed & fertilizer.	Role of Nano Technology & Bio-Tech eg: GM crops.
(2) 'Goldilocks Dilemma' (Irrigation over or too less)	Precision farming through data analysis.

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(3) Fragmented land holding — Use information technology to boost cooperatives and land pooling.

(B) Transformation:

(4) Poor value addition — Food processing technology can lead to
- Better incomes.
- Boosts exports.

(5) Low level of processing (~10%, compared to 80-90% Malaysia).

(6) Poor storage & transport — Tech. enable supply chain management (eg: cold chain infra.

(C) Output & other problems:

(7) Distribution, post harvest loss. — Boost shelf life through regular fumigation and technology in warehouses.

(8) Finance issues. — e-Tech: digital credit cards (KISAN CREDIT CARDS)

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Hurdles on the way :

(1) Poor digital adoption & resistance

(2) Lack of access of digital tech to all farmers. (86% farmers < 2 hectares)

(3) Smaller lands - delay adoption.

(4) Technology : expensive, needs skills.

Suggestions :

(1) Promote technology adoption via Common Service Centres, Krishi Vikas Kendras.

(2) Skilling to Rural Youth

(3) Promote Food Processing technology through financial subsidies.

(4) Promote technical & financial literacy through integrated programs with academia.

The use of technology can make agriculture "economically rewarding" & "intellectually satisfying" (MS Swaminathan)

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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 becomes a primary tool to augment rainfed agriculture (52% - ICAR) as well as improve cropping intensity. Yet, it can have harmful impacts too.

Negative impact on environment & natural resources

Over-irrigation can lead to issues.

(1) Depletion of ground water level: due to overuse of use of borewells.

(2) Soil salinisation due to use of flood irrigation.

(3) Promotion of Mono cropping and erosion of genetical diversity.

(4) Water scarcity by growing water guzzling crops (5) Sugarcane in Marathwada region due to irrigation.

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(5) Impact on Rainfall: Studies shows flooded fields of Northern India affect breaks in monsoon.

(6) Overuse of fertilizers: to recover lands nutrition post over irrigation.

(7) River water overuse: through draw up of canals.

The sector uses 80% of Groundwater but contributes 18-20% to GDP which points to inefficient usage.

Measures that can be taken:

(1) Promotion of micro irrigation: to boost water use efficiency (eg: drip irrigation

(2) Promoting water friendly irrigation crops and the
↳ Millets.

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~~to~~ indigenous methods. Eg: Bundela Tanks.

(3) Promote water conservation infrastructure like rain water harvesting

CASE STUDY.
(Barmer, Rajasthan model
by using MGNREGA

(4) Follow the guidelines of MIHIR SHAH COMMITTEE. to promote blue-green infrastructure.

(5) Investment in Research & Development to boost technology adoption.

(6) Promote Integrated farming and take steps for Natural farming (Mulching).

The future can be sustainable when we balance agriculture / food security with the environment to make it an EVERGREEN Revolution."

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Q.15 परमाणु ऊर्जा और अंतरिक्ष प्रौद्योगिकी के क्षेत्र में क्रमशः डॉ. होमी जहाँगीर भाभा और डॉ. विक्रम अंबालाल साराभाई के योगदान से भारत को रणनीतिक रूप से किस प्रकार लाभ हुआ? (250 शब्दों में उत्तर दीजिए) 15 अंक

How India benefitted strategically from the contributions of Dr. Homi Jehangir Bhabha and Dr. Vikram Ambalal Sarabhai in the fields of atomic energy and space technology respectively?
(Answer in 250 words) 15 Marks

India's technical prowess benefitted from the immense contribution of both Dr. Homi J. Bhabha and Dr. Vikram Sarabhai, which have made India into a technical superhorse.

(I) Role of Dr. Homi J. Bhabha:

(1) Spearheaded India's Nuclear Program and established idea of 3-stage program.

Pressurised Heavy water reactor → Fuelled Breeder → 3rd Stage Breeder

(2) Laid fondation of Tata Institute of Fundamental Research (TIFR) to boost study of fundamental elements.

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(3) Promoted peaceful use of nuclear tech for civilian purpose

(4) Headed UN Conferences as President for several nuclear initiatives.

(5) Worked to establish initial reactors at Tarapur, Maharashtra.

(6) Experimentation: of nuclear technology through small reactors in a turning pool.

(II) Role of Dr. Vikram A Sarabhai.

(1) Gave a vision to India's space program to excel in all spheres..

(2) Focused on launch vehicle development and worked for initial ASLVs

(3) Behind the first satellite launched by Russia for India - ARYABHATTA.

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(4) Role model for future ISRO scientists by leading from the back.

(5) Current developments:

(5.1) Chandrayaan 2/3 lander named VIKRAM.

(5.2) Launch station named.

(6) Promotion of management professionals through foundation of IIM - Ahmedabad.

Both the scientists have been a shining light for India who is continously building on their ideas to move ahead.

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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 is a type of AI that provides concise and customized responses based on prompt commands. It is based on machine learning and pattern recognition.

(eg: ChatGPT by OpenAI, Bard by Google

Potential to push the boundaries of Innovation

(1) Health sector: can aid in diagnosis and prediction of disease. (eg: aid in new drug discovery.

(2) Entertainment sector: Boost creativity spirits in music, theatre, art sector by augmenting human skills.

(eg: Generation of new song lyrics.

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(3) Education sector: can boost adaptive learning, customized learning outcomes, special support for differently abled, etc.

(4) Industrial sector: Management of customer responses, chatbots, analysis of data, marketing and human resource planning.

Overall it boost efficiency and effectiveness.

Challenges - societal impacts :-

(1) Joblessness: make jobs which are routine replaced by AI

eg: Hollywood writers/ actors protest

(2) Privacy: invasion of privacy while collecting data and giving answers.

(3) Digital marginalisation: among haves and

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have nots".

eg: Digital Intract Divide.

among woman ~30% (NFHS-5).

(4) Biased data: as garbage in garbage out;

(5) Issues of Artificial hallucination leading to wrong responses.

(6) Deep fakes generation can disturb social harmony by spreading fake news..

International cooperation (Global Platform for AI) GPAI.



Artificial Intelligence Skills for people (MeITY & NASSCOM)

National level policies and regulations (private & public)

Generative AI is a "double edged sword" and must be balanced in a rational manner.

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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

Mangroves are ecotone species that act as a bridge between different ecosystem, found mainly in tropical countries.

Purpose of Mangrove Alliance for Climate"

(1) Awareness: about the importance of mangroves will be boosted.

(2) Conservation: of mangroves across various nations in the tropical climate.

(3) Sharing of best practices and learnings with partner countries.

(4) Platform: to discuss factors threatening depletion of mangroves.

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Importance of Mangroves for coastal ecology:

(1) Provide disaster resilience by reducing the shock of cyclones, tsunamis (eg: Cyclone Amphan ~~blocked~~ resisted by Sunderbans

(2) Fishing and breeding habitat for a diverse set of flora & fauna.

(3) control salinity of water and aid in water purification.

(4) Aid in soil conservation by aiding as a check to erosion and sea level rise.

(5) Cultural importance: Bon-Bibi goddess in Sundarbands aids in protection.

(6) Green Jobs: for conservation and rejuvenation (eg: under MISHTI as per Budget 2023-24.

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Way Ahead: Regional & Global partnerships
: eg: BOBLME (South Asia) → COP 27.
: 'Mangrove walks' at Panaji Goa to boost awareness.
: Monitoring and proper data collection
: Control marine pollution (London Convention)

Mangroves provide diverse ecosystem services and gaining currency through "Mangrove Alliance for future"

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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

India has been declared as "Champion for Disaster Risk Reduction" by Sendai Framework due to its institutional building and agenda setting initiatives like CDRI, ..

CDRI is a platform for engagement of multiple bodies - such as UN Bodies, countries, civil societies, private sector - to enable sharing of best practices and promoting establishment of Disaster Resilient Infrastructure to boost pre-disaster preparedness

CDRI adding to robustness of Disaster Management

- Focus on retrofitting of old buildings
- Knowledge share & know how from globe eg: Earthquake enable circuit Breakers (Japan)
- Promote Build Back Better.

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Yet, overall a need for new strategy is felt because:

(1) Current approach is majorly reactive

(eg: study of projects after Joshimath crisis.

(2) Focus on 'adaptation post disaster' rather than mitigation and preparedness.

(3) Major role played by central/state government, with poor participation of private sector, NGOs, local bodies.

(4) Multiple agencies: leading to poor coordination

(5) CAG Report: showed multiple initiatives of NDMA only half completed and left

(6) Poor allocation of funds, infrastructure.

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Steps that can be taken:

① Involving local level community groups:

(eg: Protoxodhi Bandhu - Assam.

② Adoption of Indigenous solutions to problems (eg: Bhonga Huts (for earthquakes).

③ Integrate climate risk into policy and adoption.

④ 15th Finance Comission: advised ~~to~~ form MITIGATION FUNDS

⑤ Inter Agency coordination, through technology, and regular meetings.

⑥ Investment in R&D: to boost resilience.

Disasters are expected to increase in both frequency and intensity, we need to lay foundation of resilient infrastructure and society via CDRI

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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 cyber crimes that take control of the target's system / information and ~~too~~ releases them only in payment of monetary ransom.

On a rise:
- AKIRRA Ransomware = double ransom asked (2023).
- Attack on critical infrastructure such as power lines, IDs of ISRO staff.

Thus it becomes urgent to adopt stronger measures to safeguard digital profile.

Key factor contributing to the trend:

(1) Advancements in technologies: allow hackers to exploit several zero-day

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Vulnerabilities in the system.

(2) Money exchange through cryptocurrency.

(3) Creation of organised crime syndicates to facilitate Ransomware.

(4) Used equally by state and non-state actors: (eg: Beagle Boys (North Korea).

(5) Rising materialism & erosion of ethics.

(6) Low deterrence & preparedness of state & private entities. (eg: Cyber security is seen as added costs.

(7) Poor 'digital hygiene' is being exploited (eg: clicking unsolicited links.

Impact on various sectors:

(1) Defense sector: can leak sensitive files and defense strategies harming sovereignty

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② Business sector: loss of business, investments, trust of customers on a portal.

③ Emerging technologies like Digital Public Infrastructure can be misused.

eg: Probable data leak of HDFC credit cards.

→ huge infration in UPI / BHIM.

④ Social sector: exploitation of vulnerability; loss of financial savings, loss of property, identity theft and crimes.

Way forward

→ Role of ~~NCCIP~~ goverment & private sector to augment capacities. (Tallinn Manual of USA)

→ Investment in cyber security measures

→ Digital Insurance and promotion of hygiene (Cyber Swatchta)..

Digitalisation has been rampant and today we practise and forward looking approach to tackle the menance.

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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 has a long coastline of 7500 km and a land border of 15000 km which is currently managed by multiple agencies.



Fig Different Border security - land

Fig. Marine security.

The above diagram shows fragmented structure which leads to:

- duplication of work
- wastage of resources
- conflict & turf wars, lack of accountability.
- Increases response time to threats.

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Ways to boost cooperation & Collaboration among forces:

1. Inter-agency teams representing from different functions.
2. Using technology to link all forces together (eg: All Coast guards stations linked to marine navy.
3. Common head of forces: on line of Chief Defence of Staff.
4. Tri-services forces: like Defence Army for special operations.
5. Regular exercises: among forces.
   (eg: CVIGIL by Navy, Coastguard to boost collaboration
6. Communication channels: for various forces to share knowledge and

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experience.

(7) Inter-force exchanges:- where officer from one force can go on exchange for a limited time period.

(8) Combined training & Humanitarian Assistance and Disaster Relief. for forces to learn as one team.

(9) Bring inter-operability among the forces.

(10) Theatrisation or command mechanisms for armed forces

eg: Tri-service command at Andaman & Nicobar.

A "Whole of government approach" is needed to safeguard our borders while promoting national security.