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(To be filled by candidate)

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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. :

(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



CANDIDATE
CAREER

DON'TS

1. Do not
Boast
2. Do not
you
3. Do not
not
4. Do not
over

DO'S

1. Read
2. Write
of QC
3. Write
4. For rough
5. If you
other
6. Hand
hall

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 a kind of tax applied on an entity when sudden rise in profits takes place.

Eg: ~~oil~~ Conde oil

Role in redistribution of wealth

- 1) It helps in bringing equality by increasing tax on some entities.
- 2) It helps in revenue generation to government.
- 3) Excess revenue with government can be used in taking affirmative steps leading to redistribution.
- 4) Promotes social-justice by bringing equality among different sectors.

- 5) Promotes Equality by redistributing thereby helps in inclusive growth.

However

- Increased tax can harm from further profit making of firm.
- May make sector uncompetitive by increased prices due to excess taxation.
- May lead to job loss in order to maintain profit level.
- May discourage a sudden rising sector.
- May hamper overall growth and development of economy.
- Hamper FDI in long run.

Hence Windfall tax should be applied cautiously by balancing the negative impacts of it.

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

Inflation targeting refers to a mechanism whereby central government changes its policy in order to meet the set inflation target.

Eg: India $\rightarrow 4 \pm 2 \%$

§§
Successes in Implementing Inflation Targeting

- 1) MPC Committee decides various rates as per the economic condition of time hence making policy rates dynamic.
- 2) Helps in tackling liquidity based on market conditions as decided by MPC Committee.
- 3) Helps in deciding growth of economy by controlling rates.

- 4) Helps in protecting vulnerables by changing policy rates.
- 5) Decides saving rates, investment by changing policy rates.

Challenges

- 1) Issue of liquidity trap.
- 2) It takes time to see impact of MPC decisions.
- 3) Dynamic factors are involved in tackling economy. Hence MPC alone may not be sufficient.
- 4) Fiscal policy too have impact which may be not in harmony with monetary policy.
- 5) It may impact GDP of country.

Hence MPC regime's decision have several impacts on overall inflation targeting mechanism.

Q.3

भारत में सतत 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

United Nations decided to celebrate 2023 as
International Year of Millets. Millets play
crucial role in sustainable agriculture as
well as in food security.

Eg: Bajra - Rajasthan
Ragi - Karnataka.

Role in Sustainable Agriculture

- ① Millets are considered as environment friendly because of less use of water.
- ② Millets also requires less fertilisers and pesticides thereby farmer's friendly.
- ③ Less Grows even in harsh climatic conditions thereby helps in promoting green space/ biodiversity.
Eg: Bajra - Semi Arid

- ④ Supports biodiversity through supporting food chain to various birds and livestock.
- ⑤ Helps in Carbon sequestration through enhancing soil Carbon stock.

Role in Food Security

- 1) It enhances food grain availability thereby helps in tackling hunger.
- 2) Nutrition Content is high that's why also called as 'Shri-Anna'.
eg: Poornima - 7-12%.
- 3) Relatively cheaper so helps vulnerable and poor to have accessibility.
- 4) Subsistence agriculture and in harsh climates it provides farmers, a means for livelihood.
- 5) Health friendly → Gluten free, diabetes.

Therefore, need is to promote use of millet to make climate smart agriculture a reality.

Q.4

जल जीवन मिशन में पेयजल की उपलब्धता और पेयजल तक पहुंच में क्षेत्रीय अंतर को समाप्त करने का सामर्थ्य है। मिशन के महत्त्व पर प्रकाश डालते हुए, वांछित उद्देश्यों की प्राप्ति में अंतर्निहित बाधाओं पर चर्चा कीजिए।
(150 शब्दों में उत्तर दीजिए) 10 अंक

Jal Jeevan Mission has the potential to end the regional disparity in the availability and accessibility of drinking water. Highlighting the significance of the mission, discuss the underlying impediments in achieving the desired objectives.
(Answer in 150 words) 10 Marks

Jal Jeevan Mission is a flagship scheme of Ministry of Jal Shakti to provide functional tap water connection to every household by 2024.

Role in ending regional disparity

- It will provide functional tap water to every household. Hence ending regional disparity.
- It will provide 55 ltr/person water hence enhancing water accessibility to every household.
- All the houses will be included hence no exclusion thereby bringing parity.
- Promotion of water conservation techniques thereby promotes water availability along with sustainability.

Significance]

- Functional tap water connection → Improvement in standard of living → development.
- Gender empowerment because mostly women enrolled in fetching water.
- Regional parity in development.
- Health improvement through 'WASH' strategy.
- Helps in controlling migration from rural areas due to water as push factor.

Impediments]

- Various states are hesitant in implementing this scheme.
- Funding issue at ground level.
- Lack of sustainable source of water supply. Eg: Rajasthan → Desert Area.
- Issue of red-tape, corruption along with Under utilisation of funds.

Hence, in order to meet our obligation of SDG-6 it is essential to implement JSM in letter and spirit.

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 system refers to the mechanism of storing energy in order to use it later or simultaneously.

Eg: Electric vehicles.

Applications of BESS

① Ecological applications in promoting non-fossil based energy harnessing.

Eg: Wind Energy.

② Economic Applications :- New industries like solar cells will help in creation of jobs.

③ International relations also get impacted.

Eg: ↳ Creation of International Solar Alliance

↳ One sun - one world - one grid

④ Promotes indigenisation and thereby promote Atmanirbhar Bharat.

Eg: Fuel cells (Biofuel)

- ⑤ Helps in reducing imports of fossils.
Eg: National Mission on Green Hydrogen.

Potential in Energy Revolution

- ① Helps in harnessing non conventional source of energy like sun/solar.
- ② Reducing electricity charges thereby promotes affordability.
- ③ Reduces import dependency as Cond-oil ~~in~~ imports get substituted.
- ④ Helps in even enhancing export potential. Eg: Green Hydrogen Mission.
- ⑤ Helps in enhancing accessibility by generation in far areas.
Eg: PM-KUSUM → solar in Agriculture.

Hence, BESS has huge potential in not only bringing energy revolution but also in fulfilment of SDG-7 (Energy).

NEXT IAS

Candidate
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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?

Discuss in brief developments and challenges in the Gaganyaan mission of ISRO. What are the possible benefits of the mission for the society?

Gaganyaan Mission is a manned space mission of ISRO to send three astronauts in lower space for 3 days.

Dev. Developments

- Indigenous technology is being tested by ISRO. eg: Pod-Absort Test.
- 'Vyom-mitra' Humanoid robot will be sent before sending Humans into the Space.
- Training of Astronauts by Russia.
- Health services are being provided by France.
- It is planned to send in 2024.

Challenges

- Complex technology without prior experience.
- Solar radiation are high in space.
- Funding issue.
- Russia-Ukraine conflict may delay Russia's support.
- Re-entry needs extra high precision.

Possible Benefits

- It will enhance space exploration by ISRO.
- It will open way for Indian space station.
- May boost space tourism as happening in USA.
- Image of India and of ISRO will rise.
- Geo-strategic importance as only 3 nations as of now have this capability.

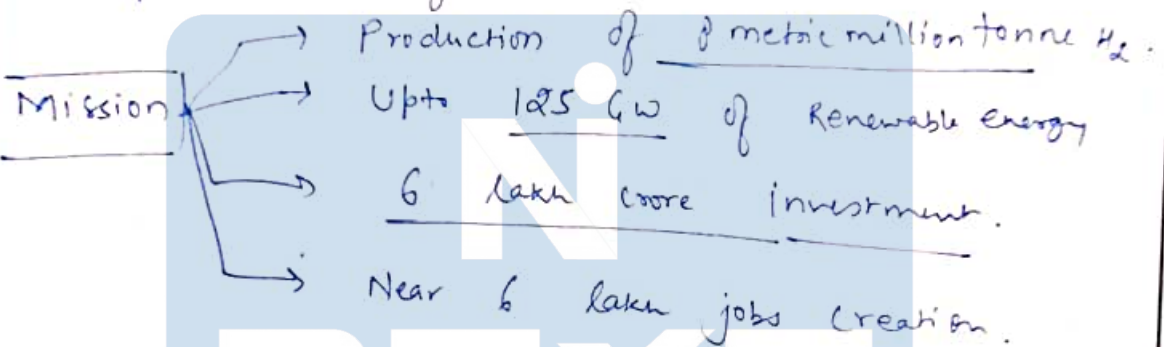
Hence, Gaganyaan mission will be our next Cordial mission to change image of our nation as visible after successful launch of Chandrayaan-3.

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

Recently, Budget launched National Green Hydrogen Mission to make India a global player in production of Green Hydrogen.



Green Hydrogen as Silver Bullet in tackling Climate Change and Pollution

- ① Green Hydrogen will help in decarbonising our transportation and industries.
- ② It will help in producing 125 GW of renewable energy.
- ③ Green Hydrogen doesn't involve use of fossil energy in hydrolysis hence eradicates pollution and emission of gases.

- ④ Green hydrogen through fuel cell can replace use of fossil fuels. Hence tackle climate change.
- ⑤ Less emissions will help in tackling pollution along with global warming.

However

- ① Cost of production of green hydrogen is higher than conventional fuels.
- ② Highly corrosive hence needs highly specialised electrolyzers.
- ③ Lack of technology to produce at large scale is also a challenge.
- ④ Hydrogen is a carrier of energy hence R&D is required in creating fuel cells.
- ⑤ Lack of international cooperation limits its production.

Although there exists various challenges but Green Hydrogen has potential to achieve our Panchamrits announced in Glasgow Summit.

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, land subsidence was observed in Joshimath which again raised concerns of ecological destructions and disaster management.

Key Lessons for Disaster Management

- ① Need of Mapping, Zoning to tackle issue of land subsidence.
- ② Haphazard Construction, ignoring of land carrying capacity can yield land subsidence.
- ③ Haphazard developmental activities like thermal power plant, excess extraction of groundwater can lead to aquifer destruction and hence land subsidence.
- ④ Need of earthquake resilient infrastructure to mitigate loss of lives from collapse of buildings.

- ⑤ Adequate capacity building along with rehabilitation measures are essential to deal with land subsidence disaster.

Lessons for Environmental Conservation

- ① Ecological Carrying Capacity should not be breached.
- ② Haphazard Construction leading to Ecological Imbalance may lead to imbalance of tectonic plates.
- ③ Aquifer puncture may lead to creation of Void in inner rocks which may lead to subsidence.
- ④ Haphazard Construction may lead to land-slide.
- ⑤ Ground/land bearing capacity should be taken into account before creating excess infrastructure.

Hence, as highlighted by Mishra Committee Report 1976, Joshimath has limited land bearing and ecological carrying capacity breaching it may lead to disaster.

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 movement is seen again on rise which was even portrayed at foreign lands like UK.

Issue of Khalistan

- It was a movement to create a separate 'Punjab Suba'.
- It was a secessionist movement based on religion and language.
- After creation of Haryana and Himachal Pradesh in 1967, it lost its popular demand.
- But demand remained mostly in NRI's which can also be witnessed now.
- Various violent attacks ^{leading} like Operation Bluebird to wipe out terrorists were part of

this movement:

Measures

- Sensitisation of people towards integrity and unity of nation.
- Federation should be strengthened whereby adequate transfer of power to state government should be take place.
- Provide effective governance along with socio-economic development of region.
- Strict action against violent activities.
- Cooperating with other countries to take adequate action against such illegitimate actions.

Hence, Unity and Integrity of nation is of prime importance. However a sense of alienation can be tackled by other means like socio-economic development along with political decentralisation.

- 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 refers to unmanned aerial vehicles which are remotely piloted to carry out particular activity.

Eg: India - Rustom drone.

Drones
Significance

→ Easier to handle.

→ Can be remotely piloted hence anonymity.

→ Small size, flexible in operation.

→ Vast applications like drug delivery.

Challenges in Border Security

1) Use of drones by enemy to send weapons, drugs, fake currency etc.

2) Gn understanding security loops.

3) For mapping, zoning and cat-acity building a against security forces.

- 4) Difficult to track drones by existing radar because of their small size.
- 5) In carrying out ag attacks against security forces.

How to tackle ?

- 1) Drone rules in border areas should be implemented.
- 2) Enhance drone tackling capability of forces.
Eg: Indrajit to kill drone.
- 3) RJD in directed Lasers can be essential.
- 4) Soft kills by jamming electromagnetic waves can be effective way.
- 5) Capacity building, enhancing drone surveillance management through latest collaborations like Israel should be strengthened.

Therefore dual use technologies like Drones are becoming a new threat to border security. Hence adequate measures should be taken to tackle it.

- 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 amendment bill was proposed to bring several reforms in electricity domain to meet the present growing needs. It has several advantages :-

Advantages

- Flexibility is being promoted whereby different discoms can send their electricity through same network.
- Ease to Consumers in choosing discom rather than relying only on one.
- It will bring efficiency in transmission and distribution. Thus T & D losses will reduce due to private

participation.

- It allows latest technology inclusion like Smart meters whereby two way Energy Exchange can take place.
- It will promote renewable energy production whereby households can sell to grid via smart meters.
- New features like pre-paid meters whereby only limited energy can be consumed.

Benefits to Environment

- Promotion of private sector competition will bring efficiency through reduced T&D losses.
- Renewable Energy fostering and selling through smart meters.
- Pre-paid meters will also reduce energy wastage.

Shortcomings

- Doesn't focus on fiscal condition of Discoms.
- State's role has been compromised although it is in Concurrent list but for larger legitimacy, state's authority could have been included.
- Less focus on T&D losses minimisation.
- Timely payment of bills is and theft issue didn't get highlighted.

Way forward

- Use of Uday Bonds to enhance fiscal capacity of discoms.
- Involve state authorities.
- Focus on infra improvement.

Hence, to achieve the vision of Glasgow's Panchamita, efficient electricity supply becomes essential to ^{reduce} enhance energy intensity by 45%.

Q.12 भारतीय प्रतिभूति एवं विनिमय बोर्ड (सेबी) शेयर बाजार को विनियमन और निवेशकों के हितों की सुरक्षा में महत्वपूर्ण भूमिका निभाता है। दिये गए कथन के आसपास में, सेबी को सामना करने वाली चुनौतियों पर प्रकाश डालिए और इस संबंध में सुधारों का सुझाव दीजिए।
(200 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 200 words) 15 Marks

SEBI is a ^{Capital} market regulator which was established in 1992 to keep the capital market efficient.

Role of SEBI

→ In checking various illegitimate activities in capital market.

Eg: Satyam Scam.

→ In keeping confidence of investors high in stock market.

→ As a quasi-judicial body it looks for grievance redressal too.

→ Various unfair practices are being checked by SEBI.

Eg: Insider Trading.

→ It do regular capital auditing of listed companies to check legitimacy.

Challenges

- Mostly SEBI role comes afterward and has limited role in prevention before committing financial fraud.
- Lack of Capacity of SEBI because of large number of companies.
- Leveraging of technology like AI is still a challenge for SEBI.
- Issues of Over-valuation of stock and regular checks on various shares hampers due to inadequate staff.

Way forward

- Pro-active punitive and preventive actions should be taken by SEBI.
- Use of latest technology to trace fraudulent activities.
- Regular recruitment to keep adequate staff.
- Use of market intelligence to enhance its role in auditing of over-valuing stocks.

Hence, SEBI plays crucial role in understanding the capital market health of state. Therefore it has to be proactive to maintain this health strong.

- 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

As per Economic Survey 2023, agriculture sector contributes near 18% to India's GDP and employs near 46% of workforce.

Several Constraint

→ Issue of lack of soil testing capability to understand type of crop to be grown.

Eg: Soil Health Card penetration is still limited.

→ Issue with poor R&D in seeds quality.

→ Lack of technology incorporation to make agriculture efficient and precise.

Eg: Digital divide in farmers.

- Issue of mechanisation of Indian agriculture as compared to developed nations.
- Lack of investment in infrastructure like Cold-chain storage which leads to post-harvest losses.

Eg: FAO → near 25% food grains get wasted in India.

- Lack of food processing industries.
- Lack of market intelligence with farmers make their selling at low price.

Role of Technology

↳ Use of Communication technology like radio, TV can help in knowing which crop to plant.

Eg: MSR announcement.

- Use of Satellites and weather ^{dopler} radar to understand weather conditions.
- Use of AI and sensor to enhance precision farming.
- Use of biotechnology to tackle various challenges of overuse.
Eg : Nano-Urea.
- Use of mechanisation like tractors for harvesting.
- Use of e-NAM to market their produce at best price.

Hence, as per Ashok Dalwai Committee, technology becomes integral in enhancing income of farmers. Therefore it should be adequately used.

Q.14

पर्यावरण एवं प्राकृतिक संसाधनों पर सिंचाई के प्रभाव का मूल्यांकन कीजिए, और कृषि में सिंचाई पद्धतियों की स्थायीता 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 refers to applying water artificially to the crop whenever required. In India near 90% of water is used by agriculture.

Impact of Irrigation on Environment and Natural Resources :-

Positive Impacts

- Promotes green cover.
- Enhance biodiversity by growing different crops.
- Enhance yield of farmers when they can invest in environmental conscious lifestyle.

Negative Impacts

- Ground water depletion.
- Excessive use of irrigation leads to land degradation, salination etc.
- Various issues like excessive use of fertilisers leading to algal bloom.

→ It also promotes agroforestry through horticulture.

→ Helps in maintaining food chain thereby ecological balance.

→ Use of pesticides
Can harm health of
nature.

Eg: Biomagnification.

→ Deforestation for
agriculture.

Eg: Amazon forest

Measures for Sustainability

1. Promote sustainable use of water
through use of water efficient
techniques.

Eg: Drip-irrigation

2. Promote organic farming to reduce
use of pesticides.

Eg: Zero Budget Natural Farming.

3. Schemes like PM Kisan Sinchai Yojna
where per-drop more crop is

focused.

4. Promote construction of traditional water storage and rainwater harvesting so that groundwater depletion can be tackled.

Eg: MGNREGA → Amrit Sarovars

5. Use of technology for precision farming.

Eg: Nano-Urea.

6. Excess subsidy on ecological damaging activities should be restrained.

Eg: Power - Punjab.

Hence, a Green Revolution 2.0 is required whereby a balance between agricultural production and nature can be established.

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

Soon after independence visionary Scientists like Dr Homi Jehangir Bhabha and Dr Vikram Ambalal Sarabhai contributed significantly to make India a prominent player in latest technology in field of atomic and space technology.

Role of Dr. Bhabha

→ Dr. Bhabha envisaged a roadmap to use atoms for energy-security.

→ He setup Bhabha atomic research Centre at Trombay (Maharashtra) to promote R&D.

→ He trained next generation Scientists to work for nuclear domain.
Eg: Dr Rajamannar.

→ He setup a framework for 3 stage nuclear energy to use India's huge Thorium reserves.

→ His legacy later on helped India to become a nuclear state which also helped strategically in becoming a global power.

Role of Dr. Vikram Sarabhai

→ He was pioneer in promoting research in space technology.

Eg: Aryabhata - Satellites.

→ He was instrumental in setting up of various space institutions.

Eg: ISRO

→ He was instrumental in developing rockets to send satellites to space.

Eg: SLV-3.

- He was also visionary who helped India to become global power in space. Thereby helped nation strategically.
- He also trained next generation scientists who led India to become self-sufficient in space technology.
Bg: Dr. APJ Kalam
- Thus visionary leaders like Dr Bhabha and Dr Sarabhai played critical role in enhancing stature of India at global forum of technology.

Q.16

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

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

Generative AI refers to use of human like intelligence by machine to act like human thereby creating new content, songs, movies etc.

Eg: Chat GPT of OpenAI.

Potential of Generative AI

→ It has huge potential in various fields like academics whereby new content can be created.

→ In health sector, it can be used to diagnosis, treatment and prevention of disease.

→ In economic sphere, various new kind of jobs will also be created as happened after revolution of computer.

- In skilling, Automated Skill plans can be designed by generative AI.
- In enhancing inter-personal relations by making communication more attractive.
Eg: Use of BARD by farmers.

Societal Impact

- Issue of job loss is major challenge which may enhance poverty.
- With latest technologies, digital divide, gender divide strengthens. Hence social inequalities also rise.
- Issue of right to privacy also causes concerns due to access use of personal data. (Justice KS Puttaswamy)

→ Ethical Concerns when machine vs
human race starts.

→ Lack of regulations causing issue of
holding accountability.

Eg: Driverless Car - Accident.

→ Various new kind of illegal activities
like use of darknet for pornography,
drugs and arms trafficking etc.

Hence, Generative AI has huge application
to bring IR 4.0 but at the same
time it has various challenges to
society which needs proactive solutions.

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 महत्व 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, COP27 of UNFCCC took place in Egypt whereby various new initiatives were celebrated and launched including 'Mangrove Alliance for Climate' (MAC).

Purpose of MAC

- 1) To take collaborated steps to conserve and manage mangrove vegetation.
- 2) To enhance overall percentage of mangrove area.
- 3) To check on various factors hampering the growth of mangroves.
- 4) To discuss importance of mangrove for humans and nature.

- 5) To promote and share global best practices to enhance share of mangroves.
- 6) To spread global awareness regarding conservation and management of mangrove forest.

Importance of Mangroves)

- 1) Helps in maintaining ecological balance in coastal ecosystem.
- 2) Ecosystem support system by stabilising nutrients, coastal erosion etc.
- 3) Ecosystem services like habitat for fishes, royal bengal tiger etc.
- 4) In promoting eco-tourism.
Eg: Sundarbans in West Bengal.
- 5) Provides livelihood to coastal people by providing fishing, medicine etc.

6) Acts as bio-shield against natural disasters.

eg: Odisha - Cyclones.

7) In reducing salinity of seas by absorbing excess salt which also helps in growth of Corals.

8) Carbon sink leading to Blue Carbon storage.

Challenges

- Agriculture vs mangroves leads to mangroves destruction.
- Lack of awareness regarding mangroves protection in Coastal Community.
- Lack of efforts to promote joint forest management.

Way forward

- Create Awareness.
- Build Symbiotic relationship with Coastal Community.
- Enhance global Cooperation.

Hence, Mangroves are one of the most critical vegetation which have huge significance for Coastal ecology.

Q.15

आपदा प्रतिरोधी बुनियादी ढाँचे के लिए निवेश को बढ़ावा देने के लिए भारत में आपदा प्रबंधन दृष्टिकोण को और अधिक मजबूती प्रदान करता है। टिप्पणी कीजिए। भारत में आपदाओं से निपटने के लिए एक नई रणनीति की आवश्यकता के औचित्य सिद्ध कीजिए।

(250 शब्दों में उत्तर दीजिए) 15 अंक

The Formation of the Coalition for Disaster Resilient Infrastructure brings more robustness to the Disaster Management approach in India. Comment and justify the need for a new strategy to tackle Disasters in India.

(Answer in 250 words) 15 Marks

Coalition for Disaster Resilient Infrastructure (CDRI) is an inter-governmental organisation proposed by India in UN Climate Action Summit 2019.

Role of CDRI in Disaster Management in India

- 1) It helps in enhancing resilience to the disaster ~~manag~~ thereby reduces overall losses to economy.
- 2) It promotes R&D in creating disaster resilient infrastructure to boost resilience.
- 3) It will enhance investment against disaster through better preparedness.

- 4) Helps in strengthening disaster preparedness.
- 5) 'Build Back Better' philosophy gets boost by promoting disaster resilient infrastructure.

Need of new strategy in India

- 1) Rising risk of disasters due to climate change needs a robust strategy to tackle.
- 2) Huge vulnerable population hence needs an inclusive strategy to protect vulnerable section.
- 3) Increased technology and knowledge should be utilised for mankind led to new strategy.
- 4) To better deal with disasters need resilience hence resilient strategy.

was needed.

- 5) To fulfill international obligation like Sendai Framework when enhanced role of government and private sector was needed.

However

- 1) CDRI still have limited membership.
eg! China is not a member.
- 2) Funding mechanism is still unclear.
- 3) Robust institutional framework is still at nascent stage.
- 4) Sharing of best practices is yet to come.
- 5) Cooperation and Collaboration with various institutions like UNFCCC is still lacking.

Hence, CDRI is essential for new India in enhancing its capability in fighting against disaster.

Q.19

महत्वपूर्ण बुनियादी ढाँचे (क्रिटिकल इंफ्रास्ट्रक्चर) और प्रमुख निगमों को लक्षित करने वाले रैंसमवेयर हमलों में हुई हालिया वृद्धि ने गजबूत 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, Global Cybersecurity Index 2022 highlights that there has been rise of ransomware attacks by 125% from year 2020 to 2021.

Need of stronger Cyber security Measures

1) Growing digital footprint because of IoT makes more vulnerable to Cyber-attacks.

2) Lack of Cyber security measures makes device more vulnerable to Cyber-threats.

3) Rising Inter-rivalry between nations leading to state sponsored Cyber attacks.

Eg: Red-echo (China).

- 4) For smooth functioning of digital ecosystem needs strong Cyber security measures.
- 5) To keep faith of people in digital India its integrity becomes crucial.
- 6) To enhance growth of nation through IT infrastructure and to promote e-governance, it is essential to have robust IT ecosystem.

Factors causing Cyber-attacks

- 1) Rising use of internet and anonymity it provides leads to Cyber-attacks.
- 2) Lack of geographical barriers makes law enforcement difficult.
- 3) Lack of hardware indigenisation makes it vulnerable to external attacks.

- 4) Lack of Investment in Cybersecurity makes it vulnerable to cyber-attacks.
- 5) Possible economic benefits through Ransome acts as a motivation.
- eg: AIIMS- server attack

Impact of these attacks

- 1) Economic Impact :- Lost of secret Industry's data along with Ransome demand.
- 2) Social Impact :- Right to privacy gets hampered because of Confidentiality breach.
- 3) Psychological Impact :- Loss of Confidential data to unauthorised users.
- 4) Legal Impacts :- Secret information like IPR, (patents/copyrights) etc.
- 5) Political Impacts in changing opinion.
eg: Cambridge Analytica.

Hence, robust Cybersecurity is essential to visualise a robust digital society.

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?

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?
(250 शब्दों में उत्तर दीजिए) 15 अंक
(Answer in 250 words) 15 Marks

Border security refers to guarding, protecting and managing of border areas.

Eg: ITBP - China Border.

Border security is ensured through :-

- 1) Greater Cooperation and Collaboration between different forces.
- 2) Use of latest technologies to guarding borders.
Eg: CIBMS - Pakistan.
- 3) Intelligence sharing for offensive and defensive preparedness.
- 4) Modernisation of forces to enhance capability.
- 5) Speedy Swift mobility of forces.
Eg: Cold Start Doctrine.

Role of Cooperation and Coordination in Coastal and terrestrial border management:-

- ① It enhances overall preparedness against possible threats.
Eg: Mumbai Attack
- ② It improves intelligence inputs to the forces.
Eg: CCITNS.
- ③ It helps in better planning and execution of operations.
Eg: Operation Samudragupta
— Drugs (NCB)
- ④ Better awareness about possible threat and impact.
- ⑤ In tackling challenge with minimum loss, coordination and cooperation becomes essential.

Measures to boost Cooperation and Coordination

- 1) Create Institutions like Integrated theatre Commands.
- 2) Use technology like IT for sharing of information as happens in CCTNS.
- 3) Coordination mechanism among different agencies.
Eg: MAC (multi-agency Centre)
- 4) Joint exercises of forces.
Eg: KAVACH Exercise.
- 5) By creating frameworks, standard operating procedures to share information

Hence, Border Security needs mechanisms where better coordination and cooperation can be strengthened in order to tackle possible border threats.