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GENERAL STUDIES (TEST CODE : 1419)

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Medium Eng./Hindi	ENGLISH	Date	6.11.20
Center	ONLINE		

INDEX TABLE			INSTRUCTIONS
Q. No.	Maximum Marks	Marks Obtained	- Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code). उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)। - There are TWENTY questions printed in ENGLISH & HINDI इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं। All questions are compulsory. सभी प्रश्न अनिवार्य हैं। - The number of marks carried by a question/part is indicated against it. प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं। - Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one. प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे। - Word limit in questions, if specified, should be adhered to. प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए। - Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off. उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।
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Total Marks Obtained:			
Remarks:			

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EVALUATION INDICATORS

1. Contextual Competence
2. Content Competence
3. Language Competence
4. Introduction Competence
5. Structure - Presentation Competence
6. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

All the Best

1. Highlighting the issues associated with power discoms in India, discuss whether privatizing discoms can help in this regard. (150 words) 10
- भारत में विद्युत वितरण कंपनियों (डिस्कॉम्स) से जुड़े मुद्दों पर प्रकाश डालते हुए, चर्चा कीजिए कि क्या डिस्कॉम्स के निजीकरण से इस संबंध में सहायता मिल सकती है।

Majority of electricity distributed in India is through public discoms. However, the power discoms face certain challenges such as :

- 1) High number of losses and accumulating non-performing assets.
- 2) Lack of connectivity to rural or remote regions, resulting in many households without continuous supply of electricity.
- 3) Use of outdated technology
- 4) Theft of electricity and no severe penalties to punish guilty.
- 5) Huge AT&C losses in discoms
- 6) Excess manpower employed resulting in more losses.

To address the above problems,

UDAY scheme was introduced.

Privatisation of discoms is another solution. It can be beneficial as:

- 1) It may help bring efficiency in the discoms functioning, with better technology and management practices.
- 2) Loss making units may shut down, giving rise to new efficient units, resulting in competitiveness, and rise in revenue.

However, privatisation can also be disadvantageous as:

- 1) The tariffs may become high and electricity unaffordable for poor households.
- 2) It can lead to monopoly and predatory pricing practices.

Therefore, it is essential that power discoms must be reformed to provide power to all.

2. Harnessing Smart Agriculture can potentially be a game-changer for farm productivity in India. Discuss. (150 words) 10
स्मार्ट कृषि का दोहन संभवतः भारत में कृषि उत्पादकता के लिए निर्णायक सिद्ध हो सकता है। चर्चा कीजिए।

Agriculture sector contributes 15% to the GDP and employs 40% of the population, thus becoming an important sector. To increase farm productivity, smart agriculture is often thought of as the solution because:

- 1) within smart agriculture, use of technology is essential. with help of GM technology, drought resistant seeds can be produced.
- 2) Nano sensors can be placed to predict rainfall pattern or test fertility of soil and its requirements.
- 3) Nanocapsules can be used to efficiently plant seeds in soil
Eg: Precision farming model by NITI Aayog & IBM.
- 4) Drones or data analytics can

help to prevent growth of weeds.
Technology can also be used to
prevent pests from harming crops.

5) Autonomous tractors can help
in harvesting crops efficiently.

6) For transportation and storage
of crops, AI based warehouses
or machines can be a big help.

However, ~~climate~~ smart
agriculture also has limitations:

- 1) Lack of research and expertise
- 2) Lack of funds to develop such
technology
- 3) Lack of training and awareness
among farmers to use such
techniques.

Therefore, it is important to
address such challenges and utilise
smart technology in the best way
to increase agricultural productivity.

3. Rather than focusing solely on quantity, inclusive growth concerns itself with the quality of growth. Discuss. (150 words) 10

केवल परिमाण पर ध्यान केंद्रित करने के बजाय समावेशी विकास, संवृद्धि की गुणवत्ता के साथ भी अपना सरोकार रखता है। चर्चा कीजिए।

Growth and development
are the two sides of a coin.
While growth focuses on quantity,
development is a broader term.
In this context, inclusive growth
as a concept emerged, where both
quantity and quality of growth
are important.

Inclusive growth is essential
in India today because :

1) While 97% of population holds
on to 30% resources, 1% ultra
rich section has control over
majority of resources, according
to oxfam report.

2) While India has 128 agro-climatic
zones, it still ranks 94th in the

Global Hunger Index and has the highest child wasting rate globally.

3) With the second largest population in the world, over 92% of our workers are employed in the unorganised sector.

Therefore, to bring about inclusive growth, we need the following :

1) focus on educating and skilling the young population, ensuring good job placements.

2) Further taxing the rich and distributing surplus to the poor.

3) welfare schemes for ensuring food security to all citizens.

Government schemes like MGNREGA, National food security Act, PM Kaushal Vikas Yojana, Samagra Shiksha Abhiyan etc. are all steps in the right direction to achieve this goal.

4. In the backdrop of Atmanirbhar Bharat, discuss the core areas crucial in export promotion for India to become a manufacturing hub.

(150 words) 10

आत्मनिर्भर भारत की पृष्ठभूमि में, भारत के लिए एक विनिर्माण केंद्र बनने हेतु निर्यात संवर्धन में महत्वपूर्ण मुख्य क्षेत्रों (कोर एरिया) की विवेचना कीजिए।

In the context of Atmanirbhar Bharat, the ideas of self-reliance and 'Vocal for local' have become prominent. For India to become a manufacturing hub, the following areas are crucial in export promotion :

- 1) Quality of goods produced should pass the test of phytosanitary barriers to increase exports to western countries eg. milk exports to Australia
- 2) As the Economic Survey 2019-20 points out, we lag behind China not in terms of specialisation but quantity. Mass scale production, introduction of new technology, upskilling of workers is essential.

3) The Economic Survey also points out that India is the only Asian country with a ^{trade} deficit in Network Products. Therefore, we must increase our contribution in the global supply chain. Eg: focus on automobiles, mobile phone assembling etc.

4) The marketing and branding of Indian products needs to be improved, to compete with foreign brands. Eg: Indian cotton is of better quality than other varieties, but not marketed enough.

5) Government policy should be supportive. Eg: Allowing FDI in various sectors.

These core areas can make India an exporting hub. It needs to be integrated with the 'Make in India' scheme as well.

5. Arsenic pollution is becoming a severe environmental issue in India. Enumerating its various sources, discuss the consequences and measures to tackle it. (150 words) 10

आर्सेनिक प्रदूषण भारत में एक गंभीर पर्यावरणीय मुद्दा बनता जा रहा है। इसके विभिन्न स्रोतों को सूचीबद्ध करते हुए, इसके परिणामों और इससे निपटने के उपायों पर चर्चा कीजिए।

Arsenic pollution is a serious challenge in India. The CGWB report points out 21 states having arsenic levels higher than the BIS stipulated permissible limit.

The sources of arsenic pollution are as follows:

- 1) Industrial waste, not treated properly or waste water disposed off in water bodies, contaminating it.
- 2) Natural levels of arsenic are found in some states like Bihar, West Bengal, Jharkhand.
- 3) Arsenic is also found in contaminated drinking water, or in tobacco plants.

The consequences of this are:

- 1) long-term exposure can lead to cancer in skin and lungs.
- 2) It can contaminate food and water by arsenic residues left behind.
- 3) It can cause skin changes such as thickening and pigmentation.

The mitigation measures are:

- 1) collecting data over arsenic affected areas and water bodies and monitoring the same.
- 2) Penalties for industries not treating the waste water.
- 3) less use of harmful chemicals in agriculture.
- 4) use of techniques like bio-remediation to remove arsenic from prone areas.

These steps will help India to fight the serious challenge of arsenic pollution.

6. The Green Term Ahead Market (GTAM) can invigorate the renewable energy sector in India. Evaluate. (150 words) 10

ग्रीन टर्म अहेड मार्केट (GTAM) भारत में नवीकरणीय ऊर्जा क्षेत्र को सुदृढ़ बना सकता है।
मूल्यांकन कीजिए।

India has a large potential for generating renewable energy and in context of dependence on fossil fuels and climate change, the Green Term Ahead Market (GTAM) can further invigorate the renewable energy sector.

GTAM is an alternative new model introduced for selling off the power by the renewable developers in the open market without getting into long-term power purchase agreements.

Transactions through GTAM will be bilateral in nature and price discovery will take place on a continuous basis.

The significance of GTAM is:

- 1) The introduction of GTAM platform would lessen the burden on renewable energy rich states and incentivise them to develop RE capacity beyond their own RPO.
- 2) This would promote RE merchant capacity addition and help achieve RE targets of India.
- 3) It will lead to increase in number of participants in RE sector.
- 4) It will benefit buyers of RE through competitive prices and transparent & flexible procurement.
- 5) It will also benefit RE sellers by providing access to a pan-India market.

Thus, the GTAM scheme will help India meet its target of 175 GW RE capacity by 2022 and commitments under Paris Agreement.

7. In context of the increasing importance of technology for disaster management, throw some light on the application of GIS and Remote Sensing in disaster management with specific examples from India.

(150 words) 10

आपदा प्रबंधन के लिए प्रौद्योगिकी के बढ़ते महत्व के संदर्भ में, भारत से विशिष्ट उदाहरणों को प्रस्तुत करते हुए आपदा प्रबंधन में जी.आई.एस. और सुदूर संवेदन के अनुप्रयोग पर कुछ प्रकाश डालिए।

Use of technology to mitigate the effects of disasters is a crucial step in disaster management.

GIS provides a tool for efficient storage and manipulation of remotely sensed data. This facilitates measurement, mapping and monitoring of disasters.

The specific GIS applications in risk assessment are:

- 1) Hazard mapping to show landslides, floods or fire hazards
- 2) Tropical cyclone threat maps are used to improve warning services and communicate with people.

Examples of GIS are numerous. Like carrying out research and rescue operations during Amphan cyclone using GIS.

Remote sensing, on the other hand, makes observation of any object from a distance easy. It records images from sensors on aircrafts or satellites.

Eg: LANDSAT, SPOT satellite, Satellite Radar system etc.

In India, remote sensing satellites like CARTOSAT, INSAT have been used in hazard risk mapping, MEGHA TROPiques for monitoring rainfall and cyclones.

Thus, GIS and remote sensing can make disaster management more efficient.

8. The CRISPR/Cas9 genetic scissors have revolutionized the genome editing technique with applications in various areas. Discuss. (150 words) 10
- क्रिस्पर/कैस9 (CRISPR/Cas9) आनुवंशिक कैंची द्वारा विभिन्न क्षेत्रों में अनुप्रयोगों के साथ जीनोम संपादन तकनीक में क्रांतिकारी परिवर्तन का संचार किया गया है। चर्चा कीजिए।

The CRISPR/Cas9 technology is a guide RNA plus nuclease enzyme like a pair of molecular scissors, which helps in genome editing. It has won the Nobel Prize for chemistry in 2020 for its widespread application :

- 1) CRISPR/Cas9 can be used to treat diseases like cancer or inherited diseases like sickle cell anaemia, by removing the defective genes.
- 2) CRISPR/Cas9 can also be used to edit genetic structure of plants, to make them pest or drought resistant.
- 3) It can also be used to save

various animals from extinction.
4) CRISPR/cas9 technology was recently employed for testing of COVID-19 patients. Eg: Feluda Test.

Thus, CRISPR/cas9 is an easy and efficient technology. However, it also ^{has} certain limitations:

1) It can be used to make designer babies. Eg: Hi Jiankui in China

The health impacts of such modifications are unknown.

2) It can be used to produce super humans as biological weapons.

3) The technology is not 100% accurate and can lead to unintended mutations.

Therefore, CRISPR/cas9 is certainly a revolutionary technology but needs more research, before it can be fully used.

9. Bring out the role played by Financial Action Task Force in tackling the menace of money laundering. (150 words) 10

धन-शोधन के खतरे से निपटने में वित्तीय कार्रवाई कार्य बल द्वारा निभाई गई भूमिका को स्पष्ट कीजिए।

The Financial Action Task Force (FATF) is an inter-governmental body established in 1989 during G7 summit in Paris. It combats money laundering, terrorist financing and other financial threats. India is one of the members.

The FATF has tackled the menace of money laundering in the following ways:

- 1) It makes recommendations for combating such crimes, reviews members' policies and procedures etc.
- 2) It seeks to increase acceptance of anti-money laundering

regulations across the globe.

3) It divides and designates countries into Black or Grey lists, depending on their contribution to money laundering.

Eg: Iran and North Korea in the Black list, Pakistan in Grey list

4) This results in economic sanctions from IMF, World Bank and such countries find it difficult to get loans.

They are also boycotted indirectly.

5) FATF has also regional style bodies like Asia Pacific Group, East Asia Group etc., to monitor such activities more closely.

Thus, FATF has been more or less successful in combating money laundering.

10. Discuss the recent reforms that have been undertaken in the National Security Architecture of India. (150 words) 10

भारत की राष्ट्रीय सुरक्षा संरचना में हाल ही में किए गए सुधारों की विवेचना कीजिए।

India has always focused on increasing its national security and has done a successful job. The National Security Architecture mainly consists of civilian and military branches. The recent reforms undertaken are:

- 1) Creation of the post of chief of defence staff, to promote tri-service harmony and cooperation.
- 2) Amending the UAPA and NIA laws to designate individuals as terrorists and includes acts of nuclear terrorism as well. This is relevant in context of increasing lone-wolf attacks across the globe.

3) Creation of Indian cyber crime coordination centre under MHA, to tackle cyber threats.

Eg: Cyber attack in Kundankulam nuclear plant.

4) Introducing a Tour of Duty scheme, to induct more youth into defence forces and promote patriotism among all citizens.

5) Focus on indigenisation of defence products and promoting work of ordnance factories.

6) Conducting Rafale jets from France and S-400 missile system from Russia.

7) Testing of scramjet missile successfully by DRDO.

Thus, the national security continues to remain a priority.

11. Bring out the key hurdles that are being faced in accomplishing land reforms in India. Also, discuss the advantages which can be reaped by accomplishing them in contemporary times. (250 words) 15

भारत में भूमि सुधारों को पूरा करने में सामना की जा रही प्रमुख बाधाओं को स्पष्ट कीजिए। साथ ही, समकालीन समय में इन्हें पूरा करने से होने वाले लाभों की भी विवेचना कीजिए।

Land reforms were initiated soon after independence, to provide farmers their due rights. Reforms like zamindari abolition, tenancy reforms, land ceiling, distribution of surplus land etc. were started. However, land reforms could not be implemented properly.

Still, the key hurdles that being faced in accomplishing land reforms are :

- 1) Absence of land records, missing pages, no organised collection etc.
- 2) Lack of political and bureaucratic will to implement land reforms.

- 3) Loopholes in the laws that were exploited by rich farmers eg. selling off land to a distant family member and buying it later under land ceiling laws.
- 4) Lack of an organised peasant movement in the country to demand implementation of reforms.
- 5) Politicisation of the issue, divided on lines of caste and religion. Eg: Rise of Dominant castes, leading to others being marginalised.
- 6) Left wing extremism has become a big hurdle in implementing land reforms in the eastern states.

The advantages that can be

reaped by accomplishing them are as follows:

- 1) It will lead to reduction of disparity among farmers as small and marginal farmers will get their requisite land.
- 2) It will increase agricultural productivity and thus GDP in turn.
- 3) Left wing extremism will be reduced as land reforms will be implemented successfully.
- 4) It will help us implement the Gandhian vision of villages as self-sufficient little republics.

Thus, land reforms must be implemented effectively.

Digitisation of land records, monitoring by officials and civil society and making farmers aware are required to make this a reality.

12. India needs to accord more significance to nutritional security than food security. Comment. In this context, suggest a framework that should be adopted by the government to achieve nutritional self-reliance.

(250 words) 15

भारत को खाद्य सुरक्षा की तुलना में पोषण सुरक्षा को अधिक महत्व देने की आवश्यकता है। टिप्पणी कीजिए। इस संदर्भ में, वह रूपरेखा भी बताइए जिसे सरकार द्वारा पोषण संबंधी आत्मनिर्भरता प्राप्त करने के लिए अपनाया जाना चाहिए।

India has the second largest fertile land after the USA and has 128 agro-climatic zones. Thus, food security is achievable. However, nutritional security is now the new challenge.

India ranks 94th in the Global Hunger Index and has the highest child wasting rate in the world. Indian children suffer from undernutrition and malnourishment.

In the rural areas, due to lack of hygiene, sanitation, clean drinking water, children and women remain malnourished.

Further, the Green Revolution led to emphasis on production of rice and wheat while millet, oilseeds and pulses were ignored. This has led to iron and zinc deficiencies.

The poor sections also face exclusion from food security schemes due to lack of Aadhaar card and remain hungry.

On the urban areas, with increased import of foreign food products, consumer choices have increased but their nutrition levels are decreasing.

On such food swamps, more unhealthy food is eaten, full of chemicals eg: fast food while the indigenous, nutritional items are forgotten.

In this context, the government needs to adopt the following framework for nutritional self-reliance:

- 1) Increased production of nutrient rich food eg. millets, pulses, green vegetables by incentivising farmers through higher MSP for such crops.
- 2) Making children and parents aware by including nutrition and health in school curriculum.
- 3) In mid Day Meal schemes, children should be given fortified products, to increase nutrition levels.
- 4) Promoting organic Indian food products through exhibitions, or fairs.

These steps will help India become a nutrition rich nation.

13. Private investments are key for India to move into a high growth trajectory. Discuss. Also highlight the steps taken by the government in recent times to address the fall in private investments. (250 words) 15

निजी निवेश भारत के लिए उच्च संवृद्धि पथ पर आगे बढ़ने हेतु महत्वपूर्ण हैं। चर्चा कीजिए। साथ ही, निजी निवेश में गिरावट को दूर करने के लिए हाल के दिनों में सरकार द्वारा उठाए गए कदमों को भी रेखांकित कीजिए।

Private investments are key for India to become a fast growing economy due to the following reasons:

- 1) Private investment helps to usher in efficient management practices and new technology to increase work productivity.
- 2) It also helps in better allocation and distribution of resources.
- 3) It helps to increase competition and break the monopoly of public firms.
- 4) It also helps to improve India's status in the global economy.

However, as the Rangarajan Committee pointed out, private investments are not always good because:

- 1) It may not necessarily increase the efficiency of a firm
- 2) It may result in undervaluation of a company's assets, while selling to a private player.
- 3) It may result in unemployment and reduced social security for the workers.
- 4) It may result in transfer pricing, predatory pricing, base erosion and profit shifting etc.

The government has taken the following steps to address the fall in private investment:

- 1) Introduction of Make in India and Digital India schemes
- 2) Allowing FDI in various sectors eg. food processing, defence, media, retail shopping etc.
- 3) Abolition of Dividend Distribution Tax and reduction of Angel Tax for start-ups.
- 4) Skilling of workers under schemes like Atal Innovation Mission, PM Kaushal Vikas Yojana.
- 5) Improving ease of doing business (63rd rank in WB Index), cutting red tapism etc.

Therefore, such steps will help to increase private investments into India and integrate it with the global economy.

14. India's geographical diversity and varied levels of development across regions necessitate a targeted region specific action plan to ensure a minimum acceptable level of prosperity. Elaborate. (250 words) 15

भारत की भौगोलिक विविधता और विभिन्न क्षेत्रों में विकास के भिन्न-भिन्न स्तर समृद्धि के एक न्यूनतम स्वीकार्य स्तर को सुनिश्चित करने के लिए एक लक्षित क्षेत्र विशिष्ट कार्य योजना को आवश्यक बनाते हैं। सविस्तार वर्णन कीजिए।

India is a geographically diverse region and the states have their own levels of development. However, this growth is varied as found in:

- 1) The Northern states like Punjab, Haryana, Uttar Pradesh are agriculturally rich states and were the main centres of Green Revolution.
- 2) The Southern states like Kerala, Tamil Nadu, Karnataka have progressed in terms of literacy, gender equality and becoming IT hubs.
- 3) The coastal states like Gujarat,

West Bengal, mainly earn revenue through fishing and aquaculture.

4) The North-east region remains backward due to difficult terrain and language barriers.

5) While Kerala, Himachal Pradesh, Puducherry are top rankers in NITI Aayog's SDG Index, Uttar Pradesh and Bihar are at bottom.

6) The BIMAARU states as coined by Amartya Sen, continue to languish due to low levels of development.

Therefore, a targeted region specific action plan is required for states in India:

1) The Red corridor in India which has fertile land and has significant tribal population, needs to have schemes for increased agriculture and selling

of tribal products to earn revenue.

- 2) The coastal states need to utilise hydropower potential to have uninterrupted power and increase employment. They also need to improve port infrastructure for more trade.
- 3) States like Tamil, Nadu, Gujarat, Rajasthan, can incentivise wind energy generation.
- 4) The flood and cyclone prone states need to have disaster management policies in place.
- 5) The mineral rich eastern states need to use better technology to utilise its potential.

Therefore, such region-specific action plans can make India more developed.

15. Empowering the farmers by ensuring barrier-free trade in the agriculture produce is critical in doubling their incomes. Enumerating the existing bottlenecks, discuss how the recent legislations can help in overcoming them. (250 words) 15

कृषि उपज का निर्बाध व्यापार सुनिश्चित करके किसानों का सशक्तीकरण करना उनकी आय दोगुनी करने में महत्वपूर्ण है। वर्तमान बाधाओं का उल्लेख करते हुए, चर्चा कीजिए कि इन पर नियंत्रण पाने में हालिया अधिनियम कैसे सहायता कर सकते हैं।

Agriculture is the backbone of our nation. To double farmers' income by 2022 is an objective to be realised. Barrier-free trade in agriculture produce is critical for this. However, farmers face bottlenecks such as:

1) Within the APMC Mandis, there is monopoly of middlemen and cartelisation practices.

2) Farmers also face many tariff barriers and have to pay taxes or commissions.

3) The farmers are not allowed to sell outside the mandis.

and they do not get remunerative prices for their products.

4) There is no provision for value addition of products within such mandis.

5) If rejected by mandis then farmers are forced to sell their produce to the government, receiving even less wages.

on this context, the government has introduced various legislations to help the farmers :

1) The Farmers' Produce Trade and Commerce Bill

2) The Farmers Agreement of Price Assurance & Farm Services Bill

3) Essential Commodities Amendment Bill 2020

These will help farmers in the following ways:

- 1) It creates trading areas free of middlemen and government taxes outside APMCs.
- 2) It will allow farmers to sell their produce directly to these new zones without paying mandi fees.
- 3) It removes stock holding limits and curbs on inter-state trade and creates a framework for contract farming.
- 4) These bills promote creation of Farmer Producer Organisations to create a level playing field.
- 5) It enables private players to invest in warehousing, other marketing infrastructure. Thus, it will create 'One Nation, One Market'.

16. The reasons for recurring floods in the regions of Eastern India such as Bihar and Assam go far beyond their topography. Discuss. Also, suggest measures to control this menace. (250 words) 15

बिहार और असम जैसे पूर्वी भारत के क्षेत्रों में बार-बार आने वाली बाढ़ के लिए केवल उनकी स्थलाकृति उत्तरदायी नहीं हैं। चर्चा कीजिए। साथ ही, इस खतरे को नियंत्रण में लाने के उपायों का भी सुझाव दीजिए।

Floods in India are a recurring incident. The Eastern states are particularly prone to floods due to the following reasons:

- 1) Geography of this region where rivers like Kosi, Brahmaputra, often change their courses.
- 2) Excessive rainfall and flat terrain leads to floods.
- 3) Apart from natural factors, anthropogenic reasons are also present, such as deforestation leading to soil erosion and vulnerability to floods.

- 4) Mismanagement of the drainage system, inefficient water holding systems and poor construction
- 5) Unplanned urbanisation, and poor capacity of dams.

The measures to control this menace are as follows:

- 1) Mitigation: Hazard Risk Vulnerability Assessment, using drones to collect data, mapping of the flood prone regions and monitoring them during monsoon.
- 2) Preparedness: Structural measures like building flood walls, dams, embankments and non-structural measures like strict rules of construction, de-silting of drains before monsoon, bio-shelters like wetlands, mangroves.

3) Response: During time of floods, quick evacuation of people, providing them shelter, food, medicines etc. using technology to disseminate information.

4) Recovery: As the sendai framework suggests, to help in reconstruction, rehabilitation and to Build Back Better.

since floods are recurring in nature in these states, it is essential to follow these measures to minimise the damage to lives and property.

17. How can 5G technology potentially bring about a digital revolution in India? Identify the challenges in adoption of 5G technology in India.

(250 words) 15

5G प्रौद्योगिकी संभावित रूप से भारत में एक डिजिटल क्रांति कैसे ला सकती है? भारत में 5जी प्रौद्योगिकी को अपनाने में आने वाली चुनौतियों की पहचान कीजिए।

5G technology is the next generation of mobile broadband that will eventually replace or augment 4G LTE connection.

5G technology can bring about a digital revolution in India as :

1) 5G offers exponentially faster download and upload speeds. It will offer multi-Gbps peak rates and ultra-low latency.

2) KPMG predicts the cumulative impact of 5G in India at \$1 trillion by 2035.

3) It will help in creating cyber-physical networks to interconnect people, objects and devices.

4) It will act as an enabler for Industrial Revolution 4.0.

5G will usher in emerging technologies like IoT, AI, Big Data thus supporting services like driverless vehicles, telesurgery and real-time data analytics.

5) It can help improve productivity in sectors like agriculture, industry, education, health care, finance etc.

However, there are various challenges associated with the use of 5G in India.

- 1) Expensive enabling infrastructure requires more costly investment
- 2) Threats of cyber attack as 5G will be a part of critical infrastructure.
- 3) It will be costly for consumers as well since new phones suited to 5G will have to be purchased.
- 4) The financial health of the telecom sector is already poor. Bidding for 5G air waves will be a challenge for debt-ridden telecom companies.

Therefore, we need to set up regulatory procedures for use of 5G, help telecom sector recover and invest in research to make the use of 5G technology as beneficial as possible.

18. Besides computing, quantum technology has potential applications in various areas. Discuss. What are the challenges which lie ahead for effective utilization of quantum technology? (250 words) 15

संगणना के अतिरिक्त, क्वांटम प्रौद्योगिकी के विभिन्न क्षेत्रों में संभाव्य अनुप्रयोग हैं। चर्चा कीजिए। क्वांटम प्रौद्योगिकी के प्रभावी उपयोग के समक्ष आने वाली चुनौतियां क्या हैं?

Quantum technology is based on the principles of quantum mechanics. It is based on the principles of quantum entanglement, superposition and qubits.

The various applications of quantum technology are as follows :

- 1) secure communication :
eg. between terrestrial stations and satellites done by china
- 2) Research : Helps in solving fundamental questions in physics related to gravity, black holes.
- 3) Disaster Management :
floods, Tsunamis, earthquakes

can become more predictable
with quantum technology.

4) Pharmaceuticals : To treat
chronic diseases, reduce time
in discovery of new molecules

5) Augments Industrial Revolution
4.0 and leverages other technologies
like IoT, machine learning,
robotics, AI etc.

The challenges associated
with quantum technology are :

1) Difficulty to harness properties
of quantum superposition in
a highly controlled manner.

The qubits are very fragile.

2) challenge of creating algorithms
and applications for quantum
computers.

- 3) It will place new demands on classical control hardware and software platforms.
- 4) Threat of cyber attacks
- 5) Lack of resources, research and expertise.

The recent initiatives of the government to launch the National Mission on Quantum Technologies and Applications (NMQTA) and QUEST are steps in the right direction.

By addressing the challenges, the potential benefits of quantum technology can be fully harnessed.

19. While most insurgent groups in North-East India have given up violence and are engaged in peace talks with the government, a number of issues could create hurdles in the future. Discuss. (250 words) 15

जहाँ पूर्वोत्तर भारत में अधिकांश विद्रोही गुटों ने हिंसा छोड़ दी है और सरकार के साथ शांति वार्ता में संलग्न हैं, वहीं अनेक ऐसे मुद्दे हैं जो भविष्य में बाधाएं उत्पन्न कर सकते हैं। चर्चा कीजिए।

The North-east region has suffered from insurgency since independence due to ethnic tensions and poor development. However, in recent times, the insurgent groups are engaged in peace talks with the government, as seen in :

- 1) Baru refugees, who escaped from Mizoram towards Tripura. Recently Baru agreement was signed.
- 2) ongoing talks with Naga groups and historic ceasefire agreement signed in 2014.
- 3) Peaceful talks with Bodo groups

to address their demands for Bodoland and rights.

4) Peaceful talks with insurgents in Manipur and Arunachal Pradesh over misuse of AFSPA.

However, there could be certain challenges in such peace talks :

1) on the Bru agreement, the natives or Locals of Tripura are now protesting against staying of Brus while the repatriated Brus in Mizoram want to go to Tripura.

2) Naga groups are divided among themselves and a few extremists continue to demand a Greater Nagalim. This has led to protests in neighbouring states of Assam, Arunachal

since a Greater Nagalim will include parts of their territories.

3) The Bodo Agreement is being criticised by rebel groups in Assam since they feel their powers are being limited to accommodate the Bodos.

4) The demand for inner line permit has now come from Assam and ^{Meghalaya} ~~Manipur~~ as well.

Therefore, in order for peace to prevail in the North-East, we need to solve ethnic tensions, increase security forces presence, provide developmental aid and indulge in more dialogue.

20. Identifying the key vulnerabilities in India's cyberspace, discuss the framework which should be adopted in the envisaged new cyber security policy in India. (250 words) 15

भारत के साइबर जगत में प्रमुख सुभेद्यताओं की पहचान करते हुए, उस रूपरेखा पर चर्चा कीजिए, जिसे भारत में परिकल्पित नई साइबर सुरक्षा नीति में अपनाया जाना चाहिए।

Cyber space has become the new frontier of national security architecture. Use of technology has now become a double-edged sword. India has seen many cyber attacks in the recent past. Eg: On the Kudankulam nuclear plant, use of malware like Pegasus, D-Track, etc.

The key vulnerabilities in India's cyberspace are as follows:

- 1) Low spending on securing the cyberspace, lack of

adequate infrastructure to
make critical information secure

2) low research and expertise
in dealing with cyber attacks

3) The cyber cells find it difficult
to track criminals since they
are anonymous and often use
the Dark web. India does not
have the required technology
to close down the Dark web.

4) Lack of uniform policy on
cyber security.

5) Lack of training among
police and other forces to deal
with cyber attacks.

In order to address the
above challenges, the following
framework should be adopted:

- 1) Increasing spending on cyber security infrastructure and providing the required training to police to track down criminals.
- 2) Establishing a protective ring around the Dark Web to stop criminal activities by detecting them early. Eg: TOP in USA
- 3) Establishment of an independent authority to deal with cyber security and an advisory council with IT experts.

The initiatives of government like Indian Cyber crime Coordination Centre, Cyber Swachhta Kendra, Cyber Surakshit Bharat etc. are all steps in the right direction.

further reforms will enhance India's cyber security.