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GENERAL STUDIES (TEST CODE : 1524)

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Medium Eng./Hindi	ENGLISH	Registration Number	62420
Center	ONLINE	Date	1.12.2020

INDEX TABLE			INSTRUCTIONS
Q. No.	Maximum Marks	Marks Obtained	
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Total Marks Obtained:			
Remarks:			

1. 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)।
2. There are TWENTY questions printed in ENGLISH & HINDI इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. All questions are compulsory. सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it. प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. 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।
6. Word limit in questions, if specified, should be adhered to. प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. 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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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.

1. Tenancy reforms are much needed to give a boost to the Indian agricultural sector. Comment. In this context, also discuss the significance of the Model Land Leasing Act, 2016. (150 words) 10
- भारतीय कृषि क्षेत्र को बढ़ावा देने के लिए काश्तकारी सुधारों की अत्यंत आवश्यकता है। टिप्पणी कीजिए। इस संदर्भ में, मॉडल भूमि पट्टा अधिनियम, 2016 के महत्व की भी विवेचना कीजिए।

Tenancy reforms aim at regulation of rent, provide security of tenure and confer ownership to tenants. It provides provisions for registration of tenants, to bring them directly under the state.

Tenancy reforms will boost the agriculture sector :

- 1) security of tenure for owners without any arbitrary ejection.
- 2) leads to social equity for poor tenants
- 3) Reduces number of land disputes
- 4) Increases agricultural productivity

The significance of the Model land leasing Act is as follows:

- 1) It enables tenant farmers and sharecroppers to avail bank credit, crop insurance and disaster relief benefits.
- 2) It allows consolidation of farm land, reduces cost of cultivation and increases profitability.
- 3) land can be leased out for allied activities like animal husbandry.
- 4) It allows quicker litigation process in case of disputes.
- 5) The duration of lease is decided mutually by owner and tenant.

Thus, the Model Act has transformed agriculture sector.

2. Identify the various challenges that have restricted the entry of Indian MSMEs into the foreign market. Also mention some government initiatives that have been taken to facilitate MSME exports. (150 words) 10

विदेशी बाजारों में भारतीय MSMEs के प्रवेश को बाधित करने वाली विभिन्न चुनौतियों की पहचान कीजिए। साथ ही, MSME के निर्यात को सुगम बनाने के लिए सरकार द्वारा की गई कुछ पहलों का भी उल्लेख कीजिए।

MSMEs are considered the backbone of the Indian economy. They employ second largest number of people after agriculture. They contribute 45% of total exports from India.

The challenges that restrict their entry in foreign market are:

- 1) Lack of sufficient credit
- 2) Lack of skilled manpower
- 3) Ineffective marketing strategy
- 4) competition from MNCs and other big industries
- 5) found mainly in unorganised sector.

- 6) low quality products impact export competitiveness.
- 7) outdated machinery
- 8) cumbersome government procedures and regulations.

The government schemes that help increase MSME exports are :

- 1) Udyami Mitra Portal to improve accessibility of credit
- 2) Digital MSME scheme to use internet to access services
- 3) Revamped scheme of fund for Regeneration of Traditional Industries (SFURTI) to enhance marketability
- 4) ASPIRE to promote entrepreneurship

Thus, such efforts will help to increase MSME exports further and make India a manufacturing hub.

3. India's march towards inclusive growth and it achieving the Sustainable Development Goals are intricately linked. Discuss. (150 words) 10
समावेशी विकास की दिशा में भारत की प्रगति और संधारणीय विकास लक्ष्यों की प्राप्ति जटिल रूप से जुड़े हुए हैं। चर्चा कीजिए।

Inclusive growth means ensuring equal benefits for all, reducing income inequalities and other social mishaps.

The UN has introduced SDGs to be achieved by 2030 by all countries.

Inclusive growth and achieving SDGs are linked:

1) SDG 1 defines zero poverty.

India has second largest number of poorers after Nigeria. Reducing poverty would lead to inclusive growth.

2) SDG 2 defines zero hunger.

India ranks 94th on Global

Hunger index and has the highest wasting rate in the world. Ensuring food security, would improve quality of life of citizens.

3) SDG 3 means ensuring good health and well-being for all.

India has inadequate health infrastructure and a large population. Health security for all would mean utilising demographic dividend.

4) SDG 4 means quality education. Literacy among all citizens, will lead to a better livelihood.

5) SDG 5 means gender equality. Ensuring women are not discriminated against, will help to utilise their potential.

Thus, achieving SDGs will lead to better social outcomes for India.

4. Highlight the need for evolving an appropriate system of Rules Of Origin in regional trading arrangements. What steps have been taken by India recently in this regard? (150 words) 10

क्षेत्रीय व्यापार व्यवस्थाओं में उत्पत्ति के नियमों की एक उपयुक्त प्रणाली विकसित करने की आवश्यकता पर प्रकाश डालिए। हाल ही में, भारत द्वारा इस संबंध में क्या कदम उठाए गए हैं?

Rules of origin signifies having the knowledge of where particular products are coming from. It helps to be certain about the identity of the importing country.

The need for Rules of Origin in regional arrangements is :

1) As seen in RCEP, India did not sign it because rules of origin mechanism was weak. It would have led to flooding of markets with cheap chinese products.

2) Without rules of origin,

countries like china can send their imports through the route of other countries eg. Vietnam

3) Rules of origin helps to maintain transparency and protects domestic manufacturers.

India has taken the following steps in this regard :

1) Introducing the Customs (Administration of Rules of Origin under Trade Agreements) Rules 2020. It has strict provisions to prevent misuse of rules.

2) An importer now will have to meet the prescribed originating criteria and possess a list of minimum information.

Thus, these rules will strengthen hands of customs in checking misuse of duty concessions under FTAs.

5. MSP regime is a creation of an era of scarcity in the 1960s. Discuss its relevance in the current era of surplus agricultural production.

(150 words) 10

MSP व्यवस्था 1960 के दशक के अभावग्रस्तता के युग का एक आविष्कार है। अधिशेष कृषि उत्पादन के वर्तमान समय में इसकी प्रासंगिकता की विवेचना कीजिए।

The MSP is the rate at which the government buys grains from farmers. It was created to counter price volatility of agricultural commodities and protect farmers.

The relevance of MSP today

- 1) It helps farmers to get remunerative prices even if the market faces volatility.
- 2) It extends to different crops and covers all kinds of farmers
- 3) It increases incentive for farmers to cultivate different crops and thus helps to ensure

food security and adequate nutrition.

However - the MSP's relevance has been questioned because:

- 1) Today, we are a self-sufficient agricultural nation.
- 2) MSP has become the maximum price instead of the floor price according to Economic Survey
- 3) MS Swaminathan's suggestion of MSP being 1.5 times cost of production has not been implemented.
- 4) It has become a politicised issue and leads to more volatility instead of reducing it.

Therefore, the MSP mechanism needs to be reformed, keeping in mind the current situation and ensuring welfare of farmers.

6. Examine the link between the recent locust attack and climate change.
(150 words) 10

हाल ही में हुए टिड्डियों के हमले और जलवायु परिवर्तन के मध्य संबंध का परीक्षण कीजिए।

Locusts are short-horned grasshoppers. FAO has said that it was the worst locust attack in 26 years. States like Punjab, Rajasthan, Gujarat, saw their crops and vegetation being adversely affected.

The locust attack is linked to climate change:

- 1) Locusts found easy breeding grounds due to increased rainfall. The climate change induced Indian Ocean Dipole, in its positive phase, led to more rainfall in Indian subcontinent.

2) The cyclones witnessed in Yemen, Oman and Arabian Sea led to more rainfall, thus inducing locust growth.

3) Strong winds also helped the locusts since they are passive flyers. climate change has increased the intensity of Western Disturbances, which is favourable for locusts.

4) climate change has also led to warmer climate, inducing more moisture in the air. Locusts prefer such areas for laying eggs.

Therefore, combating climate change is essential to fight such locust attacks in the future.

7. Highlighting the properties of Carbon Nanotubes, discuss its applications.
(150 words) 10

कार्बन नैनोट्यूब्स के गुणधर्मों पर प्रकाश डालते हुए, इसके अनुप्रयोगों की विवेचना कीजिए।

Carbon nanotubes (CNT) are cylindrical molecules that consist of rolled-up sheets of single-layer carbon atoms (graphene).

The properties of CNT are:

- 1) They are extremely small and lightweight
- 2) Resources required to produce them are plentiful and many can be made with only a small amount of material.
- 3) They are resistant to temperature changes and biodegradable
- 4) They are expensive

The applications of CNT are:

- 1) Can be used as carrier of drugs and antigens in human body.
- 2) Can be made into artificial blood capillaries for an injured body part
- 3) Can be used as drug carriers to treat tumours
- 4) Can be used as additives to various structural materials for electronics, optics, plastics and other materials of the nanotechnology fields.

Therefore, CNT are versatile and its potential should be utilised thoroughly.

8. India's domestic patent regime privileges public health over pharmaceutical industry's interests. Comment. (150 words) 10

भारत की घरेलू पेटेंट व्यवस्था औषध उद्योग के हितों पर सार्वजनिक स्वास्थ्य को विशेषाधिकार प्रदान करती है। टिप्पणी कीजिए।

India's domestic patent regime saw a 50% rise in number of patents granted in 2017. Pharmaceuticals sector accounted for 15% of Indian domestic applications for patents.

India's domestic patent regime privileges public health over industry because:

- 1) Patents prefer public health concerns to ensure life saving drugs are made available at a lower cost and are accessible to all.
- 2) It is necessary to ensure

that private sector does not establish a monopoly and makes profit generation the main motive.

3) It is necessary to save human lives since Indians suffer from a large burden of diseases.

4) It helps to regulate prices since India imports majority of Active Pharmaceutical ingredients (APIs) from China.

5) It helps to uphold India's position as largest provider of generic medicines and helping other countries as well as seen during COVID-19 crisis.

Thus, public health remains a priority over industrial motives.

9. Bring out the arguments surrounding the idea of employing the principle of 'one border - one force' on Indian borders. (150 words) 10

भारतीय सीमाओं पर 'एक सीमा-एक बल' के सिद्धांत का उपयोग करने के विचार के चतुर्दिक व्याप्त तर्कों को स्पष्ट कीजिए।

One - Border - one force is a policy through which each of the CAPFs is designated a particular border to guard.
Eg: In 2004, to achieve this idea, the entire stretch of India - china border was assigned to ITBP.

This concept will be helpful because:

- 1) It will help in better coordination since a single force will be placed at the border area.
- 2) It will help to reduce costs and ensure better operational

readiness as well.

3) It will help to improve our defence capabilities and have a better understanding of the threats of that border area.

However, this concept has some limitations :

- 1) It can be an opportunity for the enemy state to use diversionary tactics and violate ceasefire and protocol.
- 2) Mixture of forces leads to different strategies being employed and increase security.

Therefore, one Border-one force should be employed only after a cost-benefit analysis, with national security the priority.

10. Assess the need to create a new cadre of Indian Frontier Administrative Service to undertake the vital tasks at Indian frontiers. (150 words) 10
भारतीय सीमांतों पर महत्वपूर्ण कार्यों को संपादित करने के लिए भारतीय सीमांत प्रशासनिक सेवा का एक नया संवर्ग बनाने की आवश्यकता का मूल्यांकन कीजिए।

The Indian frontier Administrative service (IFAS) was created as a separate cadre in 1954 to administer the North east frontier Agency. It helped to combat Chinese incursions in the region.

Looking at the recent Galwan stand-off and past Doklam conflict, the need to create a new cadre of IFAS has been mooted.

- 1) It will help to increase national security at the frontiers through increased manpower and resources.

- 2) It will help to better defend our frontiers, especially in sensitive regions eg. Chicken's Neck corridor, Chumbi Valley, North east India.
- 3) It will reduce the burden on other security forces and create a specialised cadre exclusive for frontiers.
- 4) It will lead to better coordination and less casualties.
- 5) Taking experience from IFAS created for Arunachal Pradesh will be helpful.

Thus, creating a separate cadre of IFAS seems like a good option, in the present scenario.

11. The main objective of Union Budget 2020-21 is to provide "Ease of Living" to all citizens. Analyse the framework proposed in the Budget 2020-21 to achieve this objective. (250 words) 15

केंद्रीय बजट 2020-21 का मुख्य उद्देश्य सभी नागरिकों को "ईज ऑफ़ लिविंग" (जीवन सुगमता) प्रदान करना है। इस उद्देश्य को प्राप्त करने के लिए बजट 2020-21 में प्रस्तावित ढांचे का विश्लेषण कीजिए।

The central theme of union Budget 2020-21 is 'Ease of living for all citizens'. It is based on three prominent themes:

- 1) Aspirational India
better standards of living with access to health, education and better jobs for all sections of society.
- 2) Economic Development for all - sabka Saath, sabka Vikas, sabka Vishwas
- 3) Caring Society
Both humane and compassionate Antyodaya as an article of faith

The 'Ease of living' theme has been tried to ^{be} achieved through the following :

- 1) farmer friendly initiatives such as increasing MSP for various crops, introducing fish farmer Producer Organisations and Sagar Mitras etc.
- 2) Ensuring corruption free, policy driven good governance and a clean and sound financial sector. Eg: Proliferation of Machine learning, AI etc. to create digital governance
- 3) Improving physical quality of life through National Infrastructure Pipeline initiative by 2024-25.

4) Ensuring women and child welfare, social welfare and tourism and mitigating climate change. Eg: improve pension and insurance penetration, increase vaccination, create museums and heritage sites, create disaster resilient infrastructure through CDRI.

5) focus on water & sanitation through Atal Bhujal Yojana & Jal Shakti Abhiyan.

6) focus on education and employment. Eg: New Education Policy, common Eligibility Test by National Recruitment Agency. Apprenticeship schemes etc.

Thus, the Budget is in line with the vision of New India for 21st century.

12. Several challenges are needed to be addressed to realise the full benefits of the recent agricultural marketing reforms. Discuss. (250 words) 15
- हालिया कृषि विपणन सुधारों के पूर्ण लाभों को साकार करने के लिए अनेक चुनौतियों का समाधान करने की आवश्यकता है। चर्चा कीजिए।

As part of Atma Nirbhar Bharat Abhiyan, several agricultural marketing reforms have been introduced:

- 1) Extending TOP to TOTAL to cover all perishable fruits and vegetables for 6 months.
- 2) Promotion of contract farming and reforming APMC mandi system.
- 3) Amending Essential Commodities Act to remove stockholding limits, except in extraordinary circumstances.
- 4) creation of Agriculture infrastructure fund, formalisation

of Microfood Processing Industries
and introduction of Animal
Husbandry Infrastructure fund.

The benefits expected out
of these reforms are :

- 1) It will help farmers to get remunerative prices through
increased productivity.
- 2) It will prevent harassment
by middlemen in APMCs and
reduce tax burden as well.
- 3) It will encourage creation
of farmer Producer organisations
and increase bargaining power
of farmers.
- 4) It will help to reduce price
volatility in market and encourage
private investment in agriculture.

However, challenges need to be addressed such as :

1) The APMCs are the option for farmers if they cannot sell in markets. Thus, APMC system should not get weakened.

2) It should not lead to less benefits for farmers due to reduced prices and protection by government.

3) It should not lead to more inequality between big and small & marginal farmers.

4) consultation with farmer groups is necessary to avoid protests as seen in case of Farm Bills.

Thus, addressing these challenges will help to achieve the intended benefits of the reforms.

13. Multimodal transport requires multiple integrations across different modes of transportation. Substantiate. What are the challenges and opportunities associated with multimodal transportation for India? (250 words) 15

बहुविध परिवहन (मल्टीमॉडल ट्रांसपोर्ट) के लिए परिवहन के विभिन्न साधनों के मध्य विविध रूप से एकीकरण की आवश्यकता है। पुष्टि कीजिए। भारत के लिए बहुविध परिवहन से जुड़ी चुनौतियां और अवसर क्या हैं?

Multimodal transport is the combination of at least two or more different modes to move cargo from one place to another within the country.

It requires multiple integrations across different transport modes.

1) The recent multimodal terminal at Sahibganj, Jharkhand was inaugurated, using land and riverine transport modes.

2) The Tal Marg Vikas Project will connect various National

Waterways in the country to improve shipping and trade.

Eg: connecting ports to the production regions.

3) Multimodal project in the Railways eg. Dedicated freight corridors, requires land and road connection.

The opportunities or benefits will be as follows:

- 1) It will lead to reduction of costs due to better management of transport.
- 2) It will lead to better handling and delivery time efficiency.
- 3) It will lead to increased transport security and easier freight tracking.

- 4) It will reduce logistical costs and promote more trade.
- 5) It will be environmentally sustainable as well.

The challenges are :

- 1) It will be costly to construct such infrastructure and connect various transport modes.
- 2) It will lead to displacement of communities and encroachment of land.
- 3) It will create the challenge of coordination and will require skilled manpower.
- 4) Delays can lead to more congestion and inefficiency.

Therefore, such concerns need to be resolved urgently. Multimodal transport can improve economic growth.

14. Though COVID-19 pandemic exposes the vulnerability of Informal sector and associated labor force in India, it also presents an opportunity to rebalance formal-informal economy dynamics in the country. Discuss.

(250 words) 15

हालांकि, कोविड-19 महामारी भारत में अनौपचारिक क्षेत्रक और संबद्ध श्रम बल की सुभेद्यता को उजागर करती है, लेकिन साथ ही यह देश में औपचारिक-अनौपचारिक अर्थव्यवस्था की गतिशीलता को संतुलित करने का एक अवसर भी प्रस्तुत करती है। चर्चा कीजिए।

Around 92% of workers in India are employed in the informal sector, according to Arjun sengupta Committee.

The COVID-19 pandemic exposed the vulnerability of such workers:

- 1) Migrant workers were easily fired from jobs and had to return to their homes.
- 2) Lack of income security and regulations, led many workers to suffer from hunger and poverty.

3) working conditions being poor in the informal sector is a threat to health of such workers.

This scenario presents an opportunity to rebalance the formal - informal economy dynamics in India.

1) The recently introduced 4 labour codes will help protect informal sector workers.

Eg: Code of wages, social security, occupational safety and Industrial Relations.

2) It will protect gig and platform workers from firing from jobs and ensure minimum wages.

3) It will help workers to form unions and get their

grievances redressed in Tribunals.

We also need other reforms to protect informal sector workers such as:

- 1) Ensuring social security benefits for them eg. insurance, pension, medical check ups.
- 2) Creating regulations to ask for government permission before firing workers.
- 3) Ensuring mandatory checks in industries to improve working conditions eg. focus on sanitation and hygiene.

This will help to protect majority of our workers and transform India into a welfare economy.

15. Highlight the drivers and challenges facing India's ambition to become a gas-based economy. Mention the steps that have been taken by the government recently in this regard. (250 words) 15

गैस आधारित अर्थव्यवस्था बनने की भारत की महत्वाकांक्षा के चालकों और सामना की जाने वाली चुनौतियों को रेखांकित कीजिए। इस संबंध में हाल ही में सरकार द्वारा उठाए गए कदमों का उल्लेख कीजिए।

India plans to develop a gas based economy with the cleaner fuel gradually becoming the mainstay of country's energy security needs.

Gas comprises about 6.2% of India's primary energy mix with plans to increase this share to 15% by 2030.

The drivers of a gas-based economy are :

- 1) Natural gas, predominantly methane, is a cheap and environment friendly fuel.

- 2) It has very low emission of particulate matter.
- 3) It is 40% cheaper than LPG
- 4) The additional savings if used in productive areas like education, will pave way for a faster socio-economic development.

The challenges are:

- 1) Current dependence on fossil fuels, particularly coal.
- 2) The reserves of gas are less abundant in India and imports can increase current account deficit.
- 3) Exploration of natural gas requires manpower and new

technology, which is not found in India.

The recent steps taken by government are:

- 1) Shifting from open Acreage licensing Policy to Hydrocarbon Acreage Licensing Policy.
- 2) creating Natural Gas pipelines in North east eg. Urja Ganga Project
- 3) Allocation of more exploration blocks
- 4) Investment in gas production, transportation and import terminals.

Therefore, transition towards gas-based economy can support Indian ambition of transforming its energy system towards more efficiency & sustainability.

16. Climate Change and the associated events endanger the marine and coastal ecosystems while increasing the vulnerability of coastal population. Examine. (250 words) 15

जलवायु परिवर्तन और संबद्ध घटनाएं तटीय जनसंख्या की सुभेद्यता को बढ़ाते हुए समुद्री एवं तटीय पारिस्थितिक तंत्रों को खतरे में डालती हैं। परीक्षण कीजिए।

climate change can be defined as the large-scale shifts in weather patterns driven by global warming.

The recent IPCC report on Ocean & Cryosphere highlights the changes taking place in coastal ecosystems.

The dangers associated with climate change for marine and coastal ecosystems are :

- 1) It will lead to rise in sea level and can affect the coral population.

2) It can lead to increased temperature of ocean water and affect oxygen levels, threatening marine biodiversity.

3) Ocean acidification due to global warming can lead to coral bleaching.

4) The marine food-chain can be disrupted due to increased pollution and eutrophication.

5) The carbon sequestration potential of oceans can be affected.

6) The melting of Arctic ice due to climate change has opened up new shipping routes and increasing its vulnerability.

to exploitation.

The climate change events also pose threats to coastal communities:

- 1) Rising sea levels can lead to submergence of cities eg. small islands in Pacific, Mumbai in India.
- 2) Increasing pollution and loss of biodiversity affects the fishing community.
- 3) Climate change can increase frequency of disasters eg. cyclones, tsunamis etc.
- 4) Indigenous communities in Arctic region are now being displaced.

Therefore, combating climate change is essential to protect our marine ecosystem.

17. Using examples, highlight how natural ecosystems perform different hazard mitigation functions. (250 words) 15

उदाहरणों का उपयोग करते हुए, रेखांकित कीजिए कि प्राकृतिक पारिस्थितिक तंत्र किस प्रकार अलग-अलग संकट के शमन का कार्य करते हैं।

Natural ecosystems can help in hazard mitigation. They are thus called BIO-SHIELDS as they shield people from disasters in the same way that artificial structures do.

The various examples of such natural ecosystems are :

- 1) Wetlands are natural ecosystems which help to prevent urban floods and soil erosion. They capture water and protect biodiversity of the region.

- 2) Mangroves are great hazard mitigators, helping to protect coastal communities from cyclones, tsunamis or storm surges. They ~~have~~ strong roots and withstand any damage.
- 3) forests are another ecosystem which help to prevent disasters by serving as protective barriers eg. during earthquakes, landslides
- 4) Mountains also help in hazard mitigation by protecting people from cold waves or incessant rainfall.
- 5) Disasters like landslides can be prevented through planting of strong tree varieties.

Therefore, we need to incorporate the use of such natural ecosystems in hazard mitigation.

Eg: in sendai framework, investing in Disaster Risk Reduction for resilience involves non-structural measures which includes use of bio-shields.

The establishment of coalition for disaster Resilient infrastructure (CDRI) also aims to improve knowledge sharing on utilising such natural ecosystems for hazard mitigation.

18. Explain what genome sequencing is and state the challenges in scaling up genome sequencing projects. Also, throw some light on the recently launched IndiGen Project. (250 words) 15

व्याख्या कीजिए कि जीनोम अनुक्रमण क्या है और जीनोम अनुक्रमण परियोजनाओं को बढ़ावा देने में विद्यमान चुनौतियों का वर्णन कीजिए। साथ ही, हाल ही में आरंभ की गई इंडिजेन (IndiGen) परियोजना पर कुछ प्रकाश डालिए।

Genome sequencing can be defined as figuring out the order of DNA nucleotides or bases in a genome — that make up an organism's DNA. The human genome is made up of 23 chromosome pairs with total of 3 billion DNA base pairs.

Genome sequencing helps in the following :

- 1) To find out Level of diversity in a population.
- 2) To find out prevalence of diseases in a population.

- 3) To apply pharmacogenomics using genome sequencing
- 4) To aid in study on anthropology

The challenges associated with genome sequencing are :

- 1) It can lead to increased embryonic or germ line editing eg. creation of designer babies
- 2) It can be used for racial superiority projects or for identity politics to win elections.
- 3) It can lead to surveillance, discrimination and loss of privacy.
- 4) It requires huge number of resources, funds and expertise which can be expensive.

The recently launched IndiGen project aims to sequence genomes of 1008 rural Indians. It is an initiative of CSIR. It will help to develop precision medicine, diagnose genetic diseases, and study genetic diversity.

It is being complemented by the Genome India Project, initiated by Department of Biotechnology, to sequence genomes of 10,000 Indians in the first phase.

Thus, genome sequencing has its various benefits but the challenges must be kept in mind to prevent misuse. It can be revolutionary technology.

19. India needs to avert radicalisation and societal dissention, as internal faultlines are a breeding ground for cyber and transnational terrorism. Discuss. (250 words) 15

भारत को कट्टरपंथीकरण और सामाजिक मतभेदों को रोकने की आवश्यकता है, क्योंकि आंतरिक दरारें साइबर एवं पार-राष्ट्रीय आतंकवाद का जनन स्थल होती हैं। चर्चा कीजिए।

Increasing radicalisation and dissent in a society can make people feel alienated, and thus promote various cyber crimes or terrorist activities.

Internal faultlines are a breeding ground for cyber and transnational terrorism in the following ways:

- 1) Various organised crime groups use cyber space for activities like identity frauds, cyber stalking, financial scams etc.

2) The alienated individuals are often shown various doctored photos and videos to radicalise them further.

Eg: This is used by ISIS and ISI to promote terrorism as a religious duty.

3) often minorities who are discriminated against and lack a decent livelihood, are easier to manipulate to rise against their own country. Eg: They help in logistics and funds support for attacks as seen in Pulwama.

4) People whose grievances are not met, often become radicalised through online

dialogue forums and indulge in lone-wolf attacks.

5) Isolated individuals use cyber space for illicit activities like smuggling, money laundering.

Therefore, averting radicalisation is necessary:

- 1) Political executives must make development a priority to improve livelihoods of people in sensitive areas.
- 2) The capabilities of defence forces, RAW, IB, Cyber cells of State Police need to be improved.
- 3) Grievance redressal forums should be set up.
- 4) Cyber security must be strengthened.

This will help to prevent cyber crimes and terrorism.

20. Given the emerging security challenges, discuss why the establishment of Integrated Theatre Commands is being seen as an important defence reform. (250 words) 15

उभरती हुई सुरक्षा चुनौतियों को देखते हुए, चर्चा कीजिए कि क्यों एकीकृत थिएटर कमान की स्थापना को महत्वपूर्ण रक्षा सुधार के रूप में देखा जा रहा है।

As part of defence reforms after creation of post of chief of defence staff, the government is working on formation of integrated theatre commands.

The Indian Army has 17 commands currently. There are only 2 Tri-services commands, in Andaman & Nicobar and for Nuclear weapons.

An integrated theatre command envisages a unified command of the 3 services under a single commander for geographical areas that are of strategic & security concern.

The commander of such a force will be able to bear all resources at his disposal with seamless efficacy. He will not be answerable to individual services.

Integration and jointness of the 3 forces will avoid duplication of resources. The services will get to know one another better, strengthening cohesion in the defence establishment.

The Shekatkar Committee has recommended the creation of 3 integrated theatre commands

- northern for China border
- western for Pakistan border
- southern for maritime role

It is seen as an important
defence reform because:

- 1) It will help in better
acclimatisation of troops
to the given battlespace
- 2) Training needs and
administrative requirements
of troops can be better understood.
- 3) Equipment can be procured,
maintained and pre-positioned
for quick mobilisation.
- 4) will help in prompt and
precise decision making under
a single commander.
- 5) will lead to better coordination
and intelligence sharing.

Thus, given the current
security threats from China and
Pakistan, this reform is necessary.