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GENERAL STUDIES (TEST CODE : 1524)

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Medium Eng./Hindi	ENGLISH	Registration Number	972640
Center	ONLINE	Date	20/12/20

INDEX TABLE		
Q. No.	Maximum Marks	Marks Obtained
1	10	
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17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

- 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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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।

Tenants are those who take land on lease and undertake cultivation.

Tenancy reforms aim at evolving a strategy of lease agreement which is beneficial for both tenants and land lords.

Significance of tenancy reforms

- (i) Security of tenure incentivises investment into agriculture by tenant and improve productivity
- (ii) Institutional leasing arrangements with documentary evidence enable tenant to receive government welfare measures like PM KISAN, cheap loans
- (iii) By giving land to landless peasants → reduces rural poverty
→ prevents distress migration
- (iv) the landlords can give their land on lease and go for occupational

mobilityModel land leasing Act, 2016

- (i) decide tenancy norms in mutually beneficial terms to both landlords and tenants
- (ii) Formal tenancy documents to tenants
- (iii) Security of tenure
- (iv) Check against encroachment of land by tenant and protect landowner's rights
- (v) Special land tribunal for dispute resolution.

Significance

- a guideline to states to bring inter-state uniformity
- helps in land consolidation of small land holdings through tenancy
- encourage mechanisation and investment due to tenure security.

However most states have not implemented the act. Tenancy reforms can go long way in addressing agricultural productivity and rural poverty.

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 the infant firms which have potential to become giants of tomorrow. However their growth has been sluggish especially with regard to foreign exports.

Challenges

- (i) lack of industry-academia linkage
 - do not have access to innovative technology
- (ii) lack economy of scale to be globally competitive
- (iii) Cannot comply by quality standards in foreign markets
- (iv) Compliance issues regarding registration with Commerce Ministry, supplying of multiple documents and licenses
- (v) lack of financial capability to adopt best technologies

(vi) Tedious loan process

(vii) lack of skilled workforce in MSMEs due to low wages

Government initiatives

- NIRVIK scheme for better coverage of export credit disbursement and ensure easy access to MSME exporters
- MSME-Sampark for connecting exporters with the buyers
- Extending TReDS scheme to MSME for working loan
- Merchandise Export Incentive scheme for tax credit on exports
- Zero import duty on capital machinery used in production of export articles.
- PSB loans in 59 minutes portal, MUDRA scheme for easy loan
- Udyog Aadhar for ease of compliance

MSMEs are one of the largest employers and contribute to over 50% of total exports. They must be strengthened.

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 refers to growth with equity and sustainability refers to intergenerational equity. The two concepts are organically linked.

(i) Inclusive growth ensures that grassroot development takes place through inclusive education and healthcare. It leads to capacity development.

→ this would lead to Zero Hunger, Health for all and fulfil SDG targets

(ii) Access to infrastructure like electricity, cooking gas reduces dependence on biomass fuels.

→ reduces air pollution and conserves biodiversity

(iii) Inclusive growth leads to inclusive cities and respectable hygienic living conditions for all

→ this prevents slums, reducing pollution.

→ Sustainable cities under SDG ought to be inclusive cities

(iv) Labour intensive economic activities are usually less energy-intensive and cause lesser pollution

↳ textile, handicrafts, food processing

• this addressing both SDG of zero poverty and inclusive growth

(v) Community participation makes growth sensitive to local demands

→ ↳ fishermen are sensitive to health of ecosystem

- this leads to resilient communities and decentralised growth

Inclusiveness and sustainability go hand in hand. When all members of society are productively involved in environment-sensitive manner, growth and development are long term.

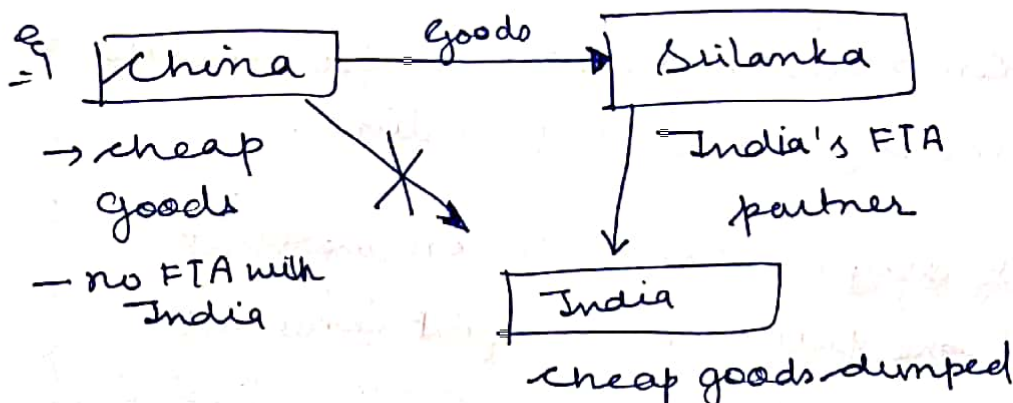
4. Highlight the need for evolving an appropriate system of Rules Of Origin in regional trading arrangements. What steps have been taken by India recently in this regard? (150 words) 10

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 aim at identifying the source of imports to ensure suitable treatment as per trade agreements

Need

- (i) Fulfill requirements under trade agreements regarding lower tariffs on certain countries.
- (ii) Prevent dumping of cheap products by re-routing them through FTA partners



This is especially meant to curb Chinese dumping

- Recently the government has released CAROTAR Rules, 2020
- every importer should ensure that imported products carry ~~Rules of Origin~~ 'certificate of origin' to identify source location
 - In case of violation, no FTA duty subsidy would be allowed
 - Differential import duty will be paid by importer
 - Exporters should also get certificate of origin tags on their products to avail benefits of duty free trade with India's FTA partners
- E-Commerce Rules, 2020 also mandate source of origin information.

Rules of Origin can help ensure that FTAs are followed in spirit and not misused by 3rd party

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।

MSP was aimed at incentivising investments into agriculture and higher farm productivity through guaranteed procurement at a fixed price.

Present Relevance in face of Surplus

- (i) Protects farmers against low agricultural prices in market
- (ii) Ensures recovery of input cost from sale of produce

MSP is calculated based on input cost and assured profits

- (iii) Sets benchmark for market
- (iv) Ensures food security by government procurement of majority grains.
- (v) Helps in informed decision making since MSP is announced before cropping season.

Issues and limitations

- (i) procurement is confined to sugarcane, rice and wheat alone
- this has distorted cropping patterns and led to shortage of pulses and oilseeds which are imported.
- (ii) Despite higher production, prices do not come down and grains remain unaffordable
- (iii) government procured grains are poorly stored and damaged
- (iv) Lack of export competitiveness due to high MSP.

Economic Survey 2019-20 has suggested restructuring of MSP to suit the present needs and balance the interest of farmers and the consumers.

New farm Acts though direct farmer-buyer interface may create alternatives to MSP.

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।

Recent locust attacks were the worst that India witnessed since 1993. It affected the states of Rajasthan, M.P., Delhi, Punjab, Haryana

Links with climate change

(i) Positive Indian Ocean Dipole

- warmer waters
- early rainfall leading to vegetation in desertic Rajasthan
- locust had fed on these vegetation and propagated

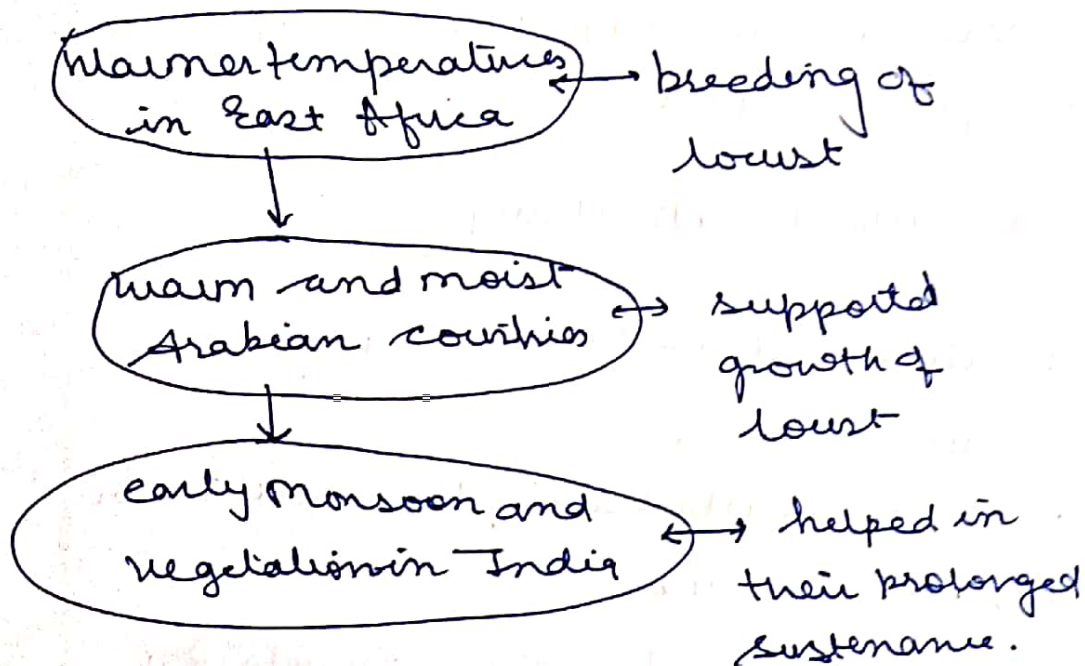
(ii) Cyclones in Arabian countries coast

- swamps formation
- warm and humid temperatures favoured growth of locust

(iii) Strong Westerly winds

- helped in carrying these locust towards Indian subcontinent

Due to climate change, there is unpredictable rainfall, higher temperatures, extreme weather events like cyclones have become frequent.



Climate change would cause multidimensional challenges and recent locust attack was but one such manifestation.

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 are nanoscale carbon compounds that have distinct physical and chemical properties.

Carbon Nanotube

- high strength and tensile ~~strength~~ resilience
- high flexibility
- chemically ~~stable~~ stable
- biodegradable
- good conductor of heat and electricity

Applications

- (i) Nano conductors and use on integrated circuits
- (ii) RO systems for purification
- (iii) Designing bodies of space craft due to ~~low~~ ~~light~~ low weight to tensile strength ratio
- (iv) ~~Body~~ Medical diagnostic tools
- (v) Building of protein gear like

bullet proof jackets

Issues

— nano scale fear of entering
respiratory tract and food chain

Department of Science and Technology
has undertaken mission for development
of carbon nanotube based
materials.

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 has a novel system of patenting medical equipments and formulations to balance public health and pharmaceutical industry's interests.

favouring public health

- mechanism of compulsory licensing to ensure supply of low cost alternatives
- encourages generic medicine
- Government has power to unilaterally take decisions regarding patents

Pharmaceutical interests

- generic medicine harm the sales of branded drugs
- Compulsory licensing leads to loss of royalty payments
- Disincentivises innovation and medicine development

- However the government of India undertakes compulsory licensing only for those drugs which are critical for urgent healthcare.
- Enables patenting rights for genuine innovations

Even WTO TRIPS allows doing away with IPR regime restrictions in the times of need to ensure public welfare.

In a country like India affordability of healthcare is a sensitive issue.

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 व्यास तर्कों को स्पष्ट कीजिए।

India shares border with multiple nations each having its own unique geographical and strategic significance.

Different forces guard different borders

eg BSF → Pakistan and Bangladesh

ITBP → Tibet Borders of China

Assam Rifles → Myanmar border

SSB → Nepal & Bhutan border.

One Border- One force advantages

- (i) Coordination in operation
 - often challenges are interlinked at border
 - eg India-China and India-Pak border require holistic and integrated surveillance
- (ii) Efficient utilisation of resources due to optimum usage
 - Utilise funds for modernisation

(III) Unity of Command to ensure uniform border practices

Why the idea is not feasible

(I) Geographical uniqueness and peculiar requirements

- China border - cold - ITBP should be trained to survive cold high altitude climate
- Bangladesh border - hot & warm - accordingly train

(II) Different nature of challenges

- cross border terrorism at Pakistan border
- Chinese aggression
- drugs and human trafficking at Myanmar border

→ this requires distinct training

(III) Difficult to centralise command structure due to lack of holistic experience.

there is a need to build capabilities of different border forces and ensure coordination through regular meetings.

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।

India has a long frontiers with many countries and development of these regions is essential for national security.

Why a new service is needed?

→ tackling administrative challenges unique to frontiers.

- illegal migration
- checking insurgency and radicalisation
- tackle drugs and arms smuggling

→ Border Area Development

- facilitate economic growth
- enhance community participation in border management

→ a dedicated cadre of workforce to tackle challenges and ensure continuity of welfare measures.

Issues and concerns

- (i) Extra financial burden on exchequer
- (ii) May create another layer of governance and lead to operational delays and ineffectiveness, role-overlap
- (iii) The challenges can be tackled through existing infrastructural and systemic challenges
 - training of IAS and IPS officials to tackle border related issues
 - border security forces can check radicalisation and illegal trade + migration.

While development of frontiers is required urgently, a new scheme for this end is not a sine qua non.

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 ऑफ लिविंग" (जीवन सुगमता) प्रदान करना है। इस उद्देश्य को प्राप्त करने के लिए बजट 2020-21 में प्रस्तावित ढांचे का विश्लेषण कीजिए।

Welfare of citizens and a healthy and prosperous life for all is the ultimate objective of the governments. In this regard Budget 2020-2021 proposes a thematic framework.

Components of Ease of Living

① Aspirational India

1.1 Agriculture, Irrigation and Rural Development

- KUSUM scheme for solar pumps and standalone units, grid connected solar pumps, etc.
- Eradicate FMD and brucellosis
- Increase milk production
- Fishery extension services through Sagar Mukta

- 'Krishi Rail' and 'Krishi Udan' for efficient transportation of perishables
- Self Help Group led village storage systems integrated with e-NAM

1.2 Wellness, Health and sanitation

- ODF+ for sustaining ODF behaviour
- PM-JAY to have more empanelled hospitals
- Expansion of Jan Aushadhi Kendra
- FIT India campaign for non communicable diseases
- TB Harega Desh Jeetega to target TB

1.3 Education and skill

- Study in India programme to promote as global education hub
- EQUIP scheme for higher education

② Economic Development

2.1 Commerce, Investment & Trade

- strengthen MSME
- NIRVIK for exporters
- National Technical Textile Mission to access global markets

- Investment clearance cell for single window clearance.

2.2 Infrastructure

- National Infrastructure Pipeline to drive investments in PPP mode
- 100 new airports under UDAN scheme
- Corporatising atleast one major port
- Highway and Railway extension
- National Gas grid extension to 27000km

2.3 New economy

- knowledge economy for new age
- National mission on Quantum computing

③ Caring India

3.1 Women & Social Welfare

- Empowering Anganwadi workers through technology
- Task force to reduce IMR, MMR

3.2 Tourism and culture

- new on-site museums & maritime museum at Lothal, Gujarat

3.3 Environment and Climate change

- clean air campaigns in major cities

Need to complement the framework with robust funding mechanism

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।

Recently the government has launched Marketing Reforms in the form of 3 acts to enable barrier free agricultural trade and empower farmers towards better price realisation of their products.

Salient features:-

- (i) Farmer Produce Trade & Commerce Act
 - enable trade outside APMCs
 - Reduce intermediaries
- (ii) Farmer Agreement on Price Assurance and farm services Act
 - encourage contract farming
 - assured markets to farmers and enable shield farmers against price fluctuations
- (iii) Essential Commodities Act
 - remove stock limits except under extraordinary circumstances
 - Incentivise investment into storage of agricultural produce.

However to achieve the intended objectives certain structural challenges need to be addressed.

(i) Small land size holding and lack of land consolidation

- need to promote Farmer Producer Organisations to strengthen farmer's voice against private buyers
- enable land consolidation

(ii) lack of connectivity in pasteurine

- need to integrate PM Gram Sadak Yojana with Bharatmala to ensure seamless transportation of grains

(iii) Reducing information asymmetry

- integrating private buyers with e-NAM

(iv) lack of literacy among farmers

- vulnerable to exploitative contracts
- SHGs and local leadership to conduct negotiations

(v) Improving Food Processing Capabilities

- need to encourage private investments
- (vi) Ensuring fair and transparent dispute resolution and appointing competent workforce
- (vii) Addressing concerns of farmers around MSPs and APMC
- (viii) Price regulation mechanism for essential commodities to deter hoarding
- (ix) Encouraging private buyers to reach to remote areas where farmers do not have viable sellers.
- (x) Building infrastructure related to electricity and ~~not~~ irrigation.

Systematic structural reforms need to complement the reforms to reap their full benefits.

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 refers to integration of two or more modes of transport to improve effectiveness and reduce cost and time.

Multiple Integrations

- (i) Building separate infrastructural capabilities

⇒ extension of road network + rail network

increasing operational range of rivers through deepening the bed.

- (ii) Creating nodal points for smooth change of mode

⇒ cargo collection at dry ports from trucks and then sending it to inland waterways.

- (iii) Need for logistical synergy

⇒ cargo handling capacity of different modes should be matched

Challenges associated

- (i) Huge infrastructural investments needed
- (ii) Difficult to allocate responsibilities in case of accidents
- (iii) Failure of one mode can paralyse the entire transportation
- (iv) Environmental challenges related to inland waterways
 - dredging and deepening of channels harms fauna and flora
 - noise of ships destroys navigation of fishes
- (v) Need for upgrading infrastructure to handle large cargo
- (vi) Rivers are not entirely navigable in their stretch
- (vii) Digitisation issues at dry ports and ensuring coordination

Opportunities

- (i) Choosing optimum and most cost effective mode in a flexible

manner

Eg roads in hilly terrain, trains in plain region and inland waterways where it is navigable.

This would bring down cost

- (i) Scope for investment and incentivising PPP mode of implementation
- (ii) Stimulus to internal trade
- (iv) Reaching inaccessible areas like North East through a combination of transport routes & Kaladan project

Recently a dry port at Varanasi was operationalised connecting water Inland Waterway - 1 with highway network. ~~stop~~

To meet the growing logistics needs, multimodal transport can be developed by addressing various challenges. Sustainability should also be considered along with feasibility.

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।

COVID-19 pandemic and accompanying lockdown measures ~~led~~ to overnight loss of livelihood for the footsoldier of Indian economy i.e. the informal labour force.

Vulnerability of Informal labour

- (i) No security of tenure
- (ii) Lack of social security benefits
 - no pension, PF or Insurance
 - no maternity benefits for women
- (iii) Highly vulnerable to external challenges and lack of resilience
 - lack of institutionalisation and thus no benefits of government schemes
- (iv) Poor working conditions
- (v) lack of organisation into trade unions and poor bargaining power

(vi) Lack of skills and inability to find adequate employment

(vii) Most informal labour is migrant labour

- lack of local identity documents
- excluded from welfare measures such as PDS food shops, PAHAL LPG supply, etc
- children suffer from inaccess to education
- live in slums in poverty.

Opportunity to rebalance

(i) Promoting formal registration of enterprises

- ensure flexibility of labour laws
- PM Rozgar Protsahan Yojana should be extended
- Simplify compliance to rules
- Prevent harassment through inspection

(ii) Registration of migrant labour

- providing local identity documents
- enroll in One Nation One Ration card

- (iii) Encourage MSME units through loans and tax incentives
- (iv) Financial aid for self employed like petty traders and enrollment in GST Composition schemes
- (v) Encouraging state-led Union for informal workers to improve their bargaining power.
- Extending minimum welfare measures
- Maternity benefits
 - ESIC, PF, pension
- (vi) Voluntary enrollment in Insurance schemes like PM Shram Yogi Mandhan Yojana to protect against uncertainties

Thus the fault lines have been barred open and the onus is on the government and the informal sector employees to take collective measures.

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।

Gas-based economy is one fuelled by gas as the major source of energy and ensuring access to gas for all citizens to ensure growth and development

Drivers of gas based economy

- (i) Clean and environmentally sustainable
 - reduces issue of air pollution
 - cooking gas reduces reliance on biomass and improves health of women
- (ii) low cost transportation through pipelines
- (iii) To encourage investments into domestic exploration by increasing domestic demand.
- (iv) Reducing regional inequalities and imbalances in access to gas for cooking and as an industrial fuel
- (v) Gas-based Thermal power plants to

replace coal based power plants

- reducing dependence on coal imports

Challenges

- (i) Huge investments for laying down elaborate pipeline network for transmission and local distribution
- (ii) Safety concerns in case of leakage
- (iii) Dependence on imports due to limited domestic production
- (iv) Difficult access in remote and hilly terrain

Steps taken by Government

(i) National Gas Grid

Budget 2020-21 aims to expand it to 27000 km.

- reducing regional imbalance
- integrating demand and supply centres

(ii) Uja Ganga Pipeline

supply of piped cooking gas to states of
UP, Bihar, West Bengal, Assam, Jharkhand

(iii) North East gas pipeline

→ Extension of Uja Ganga pipeline from
Guwahati to interior regions and
other states

(iv) NELP scheme for incentivising
domestic exploration

(v) LIG PALAN to increase adoption of
gas fuel by people and increasing
demand.

(vi) SATAT scheme to incentivise Biogas
generation from waste

There is a need to engage private
investments through PPP mode and
ensure that safety and efficacy of the
system is intact. Rational pricing
mechanism must be devised to ensure
feasibility.

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।

Across the world, some of the most important cities are located along the coasts and the coastal regions are thickly populated. They are crucial for economic growth and trade.

However, these regions are highly vulnerable to climate change and associated events

Impact on marine and coastal ecosystems

- (i) Global warming has led to rise in sea level and disturbed the salinity balance
→ affects osmotic systems of marine fauna
- (ii) Abnormally strong winds cause erosion of coast line
→ harm mangrove system

(iii) Warming has a detrimental effect on Coral system

- this in turn affects the marine fauna residing in these systems

(iv) Ocean acidification has led to deoxygenated zones

- algal bloom
- decay of organic matter within the sub-surface
- leads to elimination of marine life and benthic plants
- harms the marine animals having shells or calcareous body

⇒ Sorghum sea

(v) El-Nino and change in upwelling and downwelling patterns harms the fishes

Impact on Coastal population

- i) Salt water intrusion into fresh water resources in coastal regions
→ affects water security

(i) Impacts livelihood of communities dependent on ocean
= fishermen, water adventuresports, etc

(ii) Frequent cyclones have created havoc, lead to loss of lives & property

(iv) Rise in sea level due to global warming can lead to submergence of low lying areas and small island nations.

(v) Give rise to climate refugees and subject them to exploitation

(vi) Spread of diseases due to increase in humidity

(vii) Food insecurity due to decline in fish population

(viii) Affect economic trade and investment

Government of India has launched National Centre on Sustainable Coastal Management to understand and address the various issues around coastal system and climate change.

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।

Nature has blessed humanity with various ecosystem services for upkeep of the living surroundings. Hazard mitigation is one such ecosystem service.

Different examples are:-

(i) Floods mitigation

- forests act as natural check dams as they store water in their roots
- forests prevent soil erosion, reduce sediment load and hence flooding due to heavy rains
- Wetlands act as natural sponge for excess flood water

(ii) Cyclones and storms

- Mangrove break the speed of cyclone winds and reduce damage
- Prevent salt water intrusion into fresh water resources.

(iii) High tides and Tsunamis

- Corals brake the strength of tsunamis and high tides
- ~~the~~ Mangroves also act as a shield of protection

(iv) Earthquakes

- forests act as a natural shock absorber
- forest and vegetation holds soil against gravity and prevent landslides

(v) Desertification

- green belts prevent loss of soil fertility by containing the spread of desert

(vi) Reducing the impact of climate change

- Carbon sequestration controls global warming
- soils, forest and ocean help in carbon sequestration

(VII) Chemical disasters

- forests absorb the harmful air pollutants and act as a shield against spread

(VIII) Heat Wave

- forests, wetlands reduce Urban Heat Island Effect and keep temperatures low

(IX) Drought

- forests help in inducing precipitation
- wetlands help in percolation of water into ground and improve water table

Thus nature has actively provided safeguards for hazard mitigation.

There is a need to conserve these shields by adopting sustainable practices.

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 refers to deciphering the genes code in the DNA and use the information to draw a complete genetic profile of the individual.

It refers to reading the genetic make up of an organism or individual

Challenges in scaling up genome sequencing projects

- (i) limited technological advancement to decipher and utilise the information
- (ii) High cost
- (iii) lack of trained workforce
- (iv) lack of R & D support
- (v) Ethical Challenges → misuse of information for stereotyping a

particular community for a particular genetic makeup

- (vi) Data protection and privacy concerns
- (vii) No institutional procedural guidelines to standardise the system
- (viii) May be misused in future for germline gene editing and designer babies.

Applications and scope of Genome sequencing

- (i) Early identification of genetic diseases
Government has launched NIDAN Kendra under Ummid scheme
- (ii) Advanced diagnostics
- (iii) Development of RNA vaccines
- (iv) Addressing ~~misobal~~ anti-microbial resistance among bacteria by identifying resistant genes
- (v) Development of modified organisms
e.g. oil eating bacteria, allelopathic plants, etc.

Indigen Project

- launched by CSIR
- aims at sequencing the genes of 1000 Indians belonging to different ethnic groups
- creating genetic profiles and creating data base on different genetic carriers of diseases or specific physical features
- Comparing genome sequencing results of patients with this data base for quick and easy diagnostic
- aims to expand the project to entire India for in a phased manner
- Enable customised health care & genetic counselling to couples to check inheritance of disease by offspring.

Genome Sequencing needs to be urgently promoted through public investments to improve the healthcare services to the people.

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।

Terrorism is often systemic and structural and not sporadic and individualised. Actions at the level of society are needed to tackle the menace of terrorism.

Further cyber terrorism and transnational terrorism have made identification of sources difficult due to decentralised planning of attacks.

Averting radicalisation and societal dissention

- (i) Need to check social media platforms for communal and fundamentalist content which causes radicalisation.
- (ii) Improving access to education to promote inclusive outlook, skilling of individuals and channelising energy into productive ~~that~~ sectors.

- (iii) Building social consensus on important issues
- (iv) Preventing marginalisation of a particular community as relative deprivation leads to radicalisation
- (v) Enhancing employment opportunities and preventing poverty to engage the people in mainstream activities and make them stakeholders in peace and stability.

However such an approach tackles the symptoms missing on the causes.

- Need to inculcate constitutional morality, spirit of secularism
- Instead of averting social dissention, learning to accommodate multiple view points and exhibit tolerance.

Further other structural measures need to be taken for keeping preventive checks :-

- Strengthening cyber security infrastructure to identify the early signs of radicalisation or crime
- Community policing on radical elements
- engaging with religious leaders to propagate peace & stability
- International cooperation to tackle global terrorism

Above all create an inclusive and tolerant society where everyone has opportunities of growth. Concept of Sarvodaya i.e. Unity of existence can help find the fault lines and ensure peace.

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।

In these globalised times and a dynamic international order, the nature of security challenges is also evolving and testing the resilience of defence architectures.

New age challenges for India

- expansionist china and border issues
- String of Pearls and maritime security issues
- changing nature of warfare where air, military and navy are integratively used
- Need for swift response in times of crisis.

To tackle these challenges, government has established Integrated Theatre Commands to reform defence architecture. These are brigade sized units with all 3 tri-services - navy, airforce & military

- (i) Representation from all the tri-services
 - synergy of operation
 - unity of command as effective coordination.
 - Such coordination is not possible when separate commands are followed
- (ii) Swift response and mobile in nature
 - small size
 - flexibility of operation
- (iii) Optimum utilisation of resources & sharing of ammunition
- (iv) Opportunity to make the forces leaner and enhance technological standing

Issues

- (i) lack of prior experience and coordination challenges due to different ~~the~~ organisational culture
- (ii) lack of strategic policy guidance

(iii) Competition regarding the command positions

(iv) Also need to integrated cyber-security officials with these theatre commands.

There is need to institutionalise coordination and synergy by making pilot units and developing suitable strategy.