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GENERAL STUDIES (TEST CODE : 1524)

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Medium Eng./Hindi	ENGLISH	Registration Number	708164
Center	ONLINE	Date	25/12/2020

INDEX TABLE			INSTRUCTIONS
Q. No.	Maximum Marks	Marks Obtained	
1	10		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	10		2. There are TWENTY questions printed in ENGLISH & HINDI इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3	10		3. All questions are compulsory. सभी प्रश्न अनिवार्य हैं।
4	10		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	10		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	10		6. Word limit in questions, if specified, should be adhered to. प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7	10		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।
8	10		
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20	15		
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.

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।

With small & marginal farmers accounting for 87% of the land area and falling agricultural productivity due to uneconomic holdings, tenancy reforms are the need of the hour.

Need for tenancy reforms

- 1) Consolidation of land holdings will allow economies of scale
- 2) Over 49% of the population is employed in agriculture, contributing only 15% of GVA → need diversification of livelihood
- 3) Goal of doubling farmer incomes

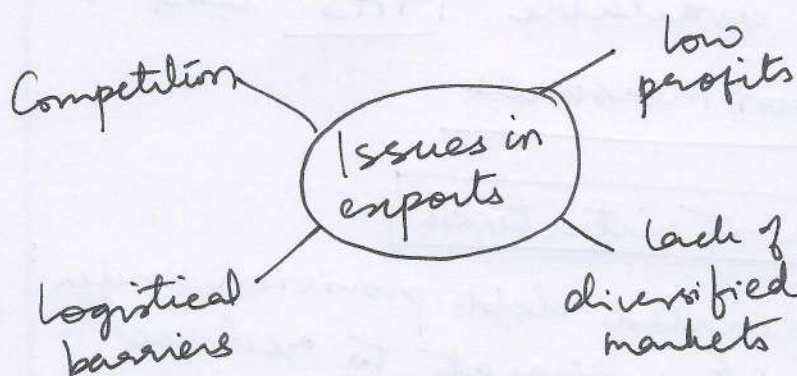
Significance of Model Land Leasing Act

- 1) Provides framework for land leasing, allowing farmers to earn income from less productive land.
 - 2) Bar on transfer of ownership secures farmers' rights
 - 3) Possibility of collectives forming leasing large parcels of land with greater value as well as better bargaining power
 - 4) Ease of doing business for privates.
 - 5) Delayed infrastructure projects can proceed, helping in development.
- If adopted by states through consensus and consultation, MLLA can go a long way in boosting agricultural 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।

Indian MSMEs produce 45% of
India's manufacturing output
as well as 45% of Indian exports.



Challenges in exports

- 1) Tough competition from cheaper products from export-intensive economies - not only China, but increasingly Vietnam and Bangladesh.
- 2) Imposition of technical barriers to trade (TBT) and sanitary and phytosanitary barriers (SPS)

especially in Europe.

- 3) lack of capital and credit access to implement required testing, grading and packaging standards
- 4) Poor awareness among producers about available PTAs and promotion measures.

Government initiatives

- 1) Subordinated debt provision under Atmanirbhar Bharat to reduce COVID impact.
- 2) RoDTEP Scheme for tax incentives
- 3) ~~Atmanirbhar~~ SEZs to procure minimum content requirement from MSMEs
- 4) Availability of TReDS facility to raise finance.

These measures with proper implementation can help in achieving economies of scale in the MSME sector.

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।

The SDGs provide a comprehensive global framework for sustainable development that is aligned with India's own goals. India's Commitment towards realising SDGs by 2030 can thus give it a global platform for its developmental efforts.

Linkages with inclusive growth

- 1) SDG 2 - Zero Hunger → A top priority (India ranked 109 on Global Hunger Index)
- 2) SDG 1 - No poverty → Another core priority as around 20% population is BPL
- 3) ^{SDG 3} Good health & well-being → through schemes such as PMJAY, PMBJP etc

SDG 4-

- 4) Quality education → especially relevant given our demographic dividend.
- 5) SDG 5 - Gender equality → urgent given declining child sex ratio
- 6) SDG 6 - Clean water & Sanitation → main push of SBA
- 7) SDG 7 - Affordable & Clean Energy → to meet Paris NDCs
- 8) SDG 8 - Decent work & economic growth → goal of \$5tr economy
- 9) SDG 9 - Industry, innovation, infrastructure → to correct neglect of manufacturing
- 10) SDG 10 - Reduced inequalities
- 11) SDG 11 - Sust. cities & communities etc.

NITI Aayog is leading alignment to SDGs, with MoSPI having developed a National Indicator framework to monitor progress.

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 refer to labelling requirements in the course of international trade that indicate the origin of a particular product.

Need in regional trading agreements

- 1) Needed to allow producers to make use of agreed upon lower tariffs.
- 2) To identify true source of products, especially in times of global value chains with internationalised production networks.
- 3) To protect against unauthorised dumping of foreign goods causing harm to local industries.

4) To maintain useful data on international trade trends

Recent steps

- India's decision to stay out of RCEP was partly due to rules of origin disagreements and fear of Chinese imports flooding markets.
- Indian govt has started a scheme to provide single-window information to producers and traders about all available FTAs and relevant RoO requirements.
- Development of infrastructure to comply with RoO

Thus RoO can help achieve India's

"Atmanirbhar Abhiyan"

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 Minimum Support Price (MSP)

System is intended to insure farmers against sudden price fluctuations and supply glut. It also serves as a basis for procurement enabling PDS system.

Issues in modern era

- 1) Creates cobweb effect - distortion in market signals and ends up producing price fluctuations (Economic

Survey

- 2) Issued too late before sowing season
- 3) Flaked up by lobbies of rich

farmers - not seen in scarcity era.

4) Mismatch with additional supports declared by states.

5) Imbalance in regions - over 70% of procurement from Northwestern states - product of surplus era.

Relevance

Informal and small landholder nature of agricultural sector necessitates some support, but reforms are needed, such as -

- (i) Statutory ceiling on price
- (ii) Rationalisation of list of 23 items
- (iii) Replacements with DBT to farmers instead

Recommendations of Shanta Kumar and Ashok Dalwai committees must also be considered.

6. Examine the link between the recent locust attack and climate change.

(150 words) 10

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

The recent attack of desert locusts caused large scale destruction of agri-produce in Northwestern India, with highest numbers yet.

Link with climate change

1) Warming of Indian Ocean produced higher temperatures and more rainfall in Eastern Africa where locusts take birth.

2) Extended monsoon season in India provided damp ground - suitable for breeding season in India.

3) Recent attack also marked highest inward reach into the

country, showing seriousness of threat.

4) Climate change also reduces resilience of plants, necessitating pesticides

Reduced attention along their course through West Asia and Pakistan due to preoccupation with COVID also caused intensification of attack on India.

The Locust Warning Organisation issued directives for control, mainly through pesticide spraying. Preparedness will have to be improved in future years given rising impacts of climate change.

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 cylindrical formations of elemental carbon that are produced in nano-dimensions (10^{-9} m).

Properties & Applications

- 1) High electrical storage capacity - useful in storage over long term without loss.
- 2) Use in precision medicine through targeted drug delivery due to precision and easy placement.
- 3) Use in building materials to give strengths to structures and

improve sustainability - however
involves high cost

Carbon nanotubes are an
important area of R&D in
India under the National Nanotechnology
Mission.

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, implemented mainly through the Patents Act, has been in the news for clashing with interests of global pharma industry.

Public health focus

1) India allows compulsory licensing - especially useful in public health crises in times like the COVID-19 pandemic, reducing private pharma profits

2) Parallel importation is allowed from foreign suppliers without regard to patent-holders for same product in India.

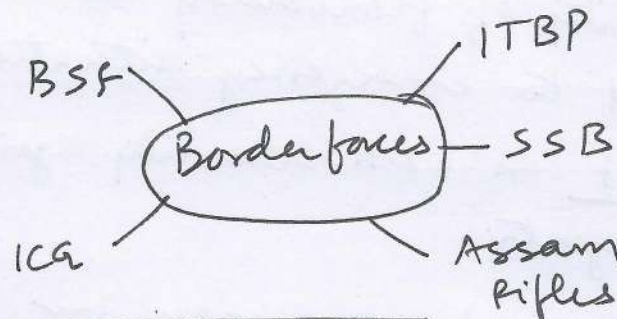
3) Ban on evergreening - whereby industries make small incremental changes to keep patents in perpetuity. These measures have allowed India to emerge as a hub for affordable exports of generic medicines to many developing countries; and of vaccines (50% of global supply). While they may be hurtful to interests of large companies beyond a point, they have also been instrumental in accelerating domestic pharma industry.

The regime is also in alignment with the Doha amendment to TRIPS.

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।

The Madhav Godbole committee
and group of Ministers
constituted in the Kargil aftermath
recommended One Border One Force
principle.



For One Border One force

- 1) Frequent withdrawals of border forces for other purposes create gaps in security.
e.g. Assam Rifles → Myanmar border
→ Counter-insurgency operations

2) Better development of rappot with locals without frequent transfers.

3) Develop dedicated expertise with better understanding of terrain.

Against

1) Necessity of flexibility to respond to emergency situations
e.g. BSF in J&K security against insurgents.

2) Withdrawals necessary for disaster response
e.g. SSB in Uttarakhand floods.

OBOF would be a significant security reform if implemented with adequate planning and investments to protect our 15,000 km-long coastline

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।

Indian frontiers, extending over 15,000 km, are faced with a double burden of security challenges and developmental deficits.

Need for Indian Frontier Admin. Service

- 1) Present system of AGMUT cadre results in frequent transfers - preventing specialisation of officers in unique circumstances of Northeast.
- 2) Extraordinary needs of development due to low education, rampant drug use (N East is highest in India) and poor reach of schemes.
- 3) Proper coordination with border security forces.

Against proposal

- 1) Existence of special schemes and provisions - DONER, SARDP-NE
~~WATER~~ BAPP, BRO etc.
- 2) Against idea of national integration - present system of IAS is a powerful vehicle of unity
- 3) Heavy investments needed in restructuring and development of new organisation
- 4) Better to improve participation of locals in present system

Thus the imperatives of border security, national integration and administrative efficiency must be balanced in consideration of such a proposal.

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।

The Union Budget of 2020-21 seeks to realise goals such as "Aspirational India", "Economic Development for All" and "Caring Society", towards the cause of Ease of Living.

Procedural & tax simplifications

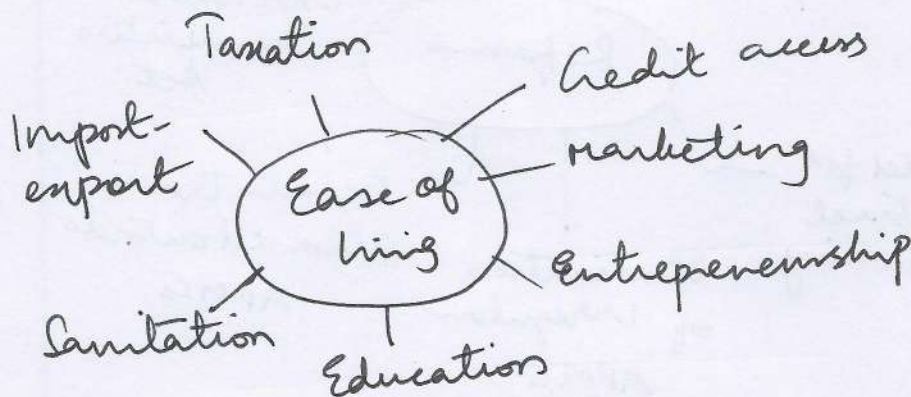
- 1) Income tax ^{slab} reduction for those willing to forgo exemptions aims to increase ease of tax filing
- 2) Facilers online tax payment and dispute resolution improves ease of doing business.

For producers

- 1) Kisan Rail improves ease of access to markets for farmers.
- 2) NIRVIK scheme improves ease of exports.
- 3) eAtithi improves ease of customs for imports.
- 4) TReDS facility for MSMEs enhances ease of credit for them.
- 5) Tax holiday for specified startups improves ease of entrepreneurship.
- 6) Village storage scheme provides ease of marketing for agricultural economy.

For development

- 1) Proposal to start teaching hospitals in PPP mode in underserved hospitals → ease of medical education
- 2) ODF++ to improve ease of sanitation

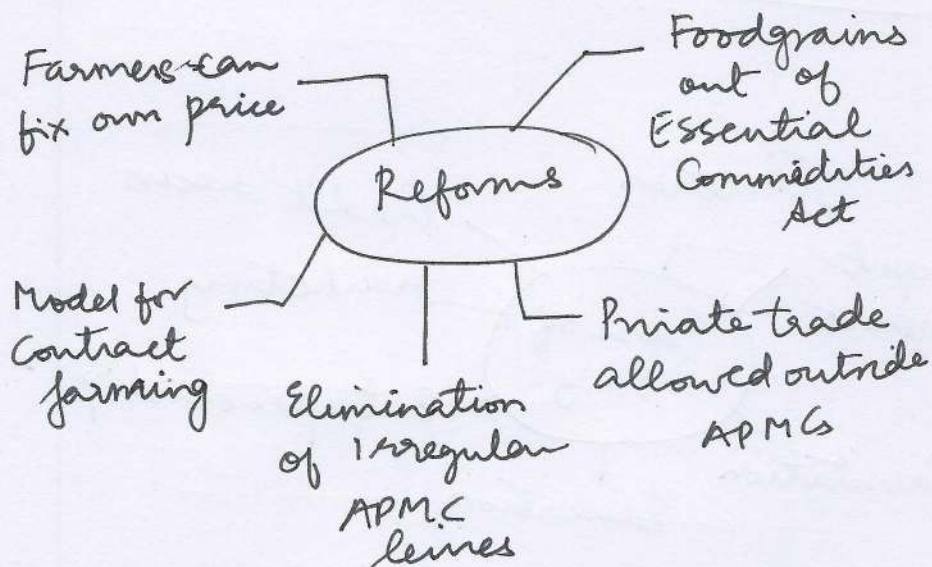


Thus the Budget provides a multi-sectoral approach to ease of living.

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।

Recent agricultural marketing reforms seek to deregulate the trade in agricultural produce, incentivise storage and marketing infrastructure and open up contract farming.



Challenges in realising benefits

- 1) low landholdings → 86% of agricultural households are

Small & marginal farmers, who
lack capital and credit access
to invest in improvements.

2) low private storage capacity
due to decades of disincentivisation
due to arbitrary stock limits
under ECA.

3) leakages in PDS.

4) High cost of agricultural inputs

5) Lack of organised power among
small & marginal farmers - creates
fears of exploitation by contract
farming at the hands of corporates.

6) Post-harvest losses due to
improper transportation and storage.

- 7) Lack of private infrastructure for testing, grading, packaging outside APMCs.
- 8) Lack of marketing linkages with individual farmers outside the APMC system.
- 9) Poor exports - only 7% of produce

Thus the recent reforms need a large-scale reform of agricultural sector to be beneficial. With agriculture still employing 49% of the population but contributing only 15% of the GVA, measures like export promotion of value added products, food processing MSMEs, land reforms etc. are the need of the hour.

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 the integration of various modes of transportation - e.g. land, rail, inland waterways - run by the same operator along a predetermined route.

Requirement of multiple integrations

- 1) Physical integration has to be undertaken to ensure smooth transition between any two modes e.g. Recent project on NW1 has "roll-on-roll off" mechanism for transfer from road to inland shipping
- 2) Regulatory integration is needed for smooth operation. This means real-time coordination between authorities

Such as NHAI, NVAI and Railways.

- 3) Logistical integration is needed, for which advanced logistics management information systems may be useful.
- 4) Process integration for integrated permits, land and environmental clearances will be useful.

Challenges

- 1) Development of infrastructural linkages between various modes requires high investment.
- 2) Land acquisition problems, especially in major industrial centres.
- 3) Poor port-hinterland connectivity
- 4) Logistical gaps in all modes
e.g. high turnaround time at ports
- 5) Already burdened transport sectors -
losses in railways, road sector

affected by economic slowdown.

6) Environmental concerns from large-scale infrastructure - e.g. highways may cut through protected areas.

Opportunities

1) Potential to boost exports by connecting hinterland to ports - e.g. Varanasi to Haldia multimodal project.

2) Stimulus to infrastructure development in tier 2 and 3 towns due to connectivity e.g. Sahibganj in same project

3) Ease of doing business improvement due to lower logistical delays.

4) Lower costs in long term due to economy of scale.

Multimodal transportation thus has great promise for trade, infrastructure and manufacturing in India.

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।

The informal sector employs around 91% of the workforce in India. It is marked with high vulnerability, low incomes, and poor credit access.

Vulnerability exposed by COVID-19

1. COVID-19 lockdowns hit sectors with high share of informal workforce - hospitality, real estate etc.
2. Migrant workers underwent large-scale job loss and suffering - Economic Survey estimates over 100 mn migrant workers
3. Informal sector experiences poor working conditions in crowded,

unhygienic environments, putting
workers at high risk of infection

4. Women are overrepresented in
informal sector. As COVID pushed
men down into informal sector, women
were pushed further down into
unemployment.

5. Lack of social security exposes
informal sector to sudden loss of
income and high OoPE on healthcare

6. Dominance of child labour in
illegal activities (e.g. glass industry in
Allahabad) goes unmeasured.

Opportunities to rebalance

1. Databases are being created for
individual workers migrating across
states to avoid another migrant
exodus.

2. Credit is being provided to street vendors - serves to sustain income as well as a step towards formalisation
3. Renewed impetus to bring small traders under GST net.
4. Promotion of SHGs - special refinance facility has been made available through NABARD.
5. Promotion of handicraft exports is being undertaken.

Way Ahead

Initiatives for skill certification and development, entrepreneurship promotion, cooperatives etc. must be enhanced further to increase formalisation of the economy.

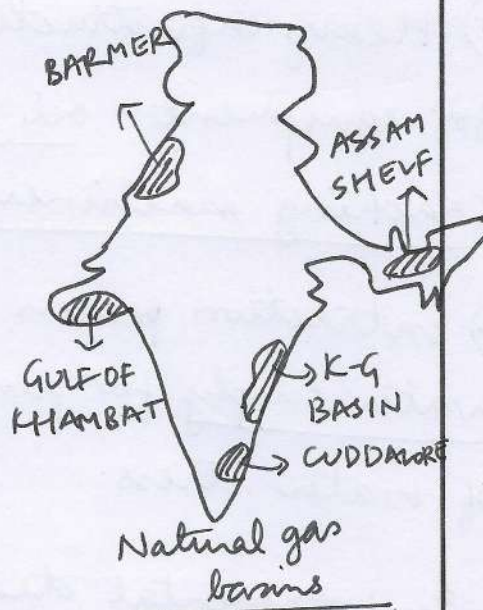
15. Highlight the drivers and challenges facing India's ambition to become a gas-based economy. Mention the steps that have been taken by the government recently in this regard. (250 words) 15

गैस आधारित अर्थव्यवस्था बनाने 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 targets to raise the share of natural gas in its energy basket from 6.5% to 15%.

Drivers of gas-based economy

- 1) Availability of natural gas in diverse locations
- 2) Need to diversify away from coal, due to 60% import dependence and emissions issues.



- 3) Rising requirements due to increasing urbanisation as well as

push for manufacturing activity
under Make in India.

4) Uncertainty of renewable energy
sources along with high costs -
gas based economy as middle
path between coal and renewables

Challenges

- 1) Heavy infrastructure investment
for equipment - oil drills, hydraulic
cracking machinery.
- 2) Extraction process needs massive
water supply for pumping - in times
of water stress.
- 3) Environmental degradation due to
extraction - landslides, soil
degradation etc.

4) Controlled pricing → domestic gas
prices are administered by govt.
leading to poor incentive for private
investments

Recent steps

- 1) Promotion through National Gas
Grid and City Gas Distribution
Networks.
- 2) Unified gas pricing system is
proposed.
- 3) First gas exchange for imported
natural gas for real-time sale and
purchase of gas at Dahaj, Hajira, Kakinada
- 4) Promotion to biogas through schemes
such as GOBARdhan.

Bringing about a gas based economy
can thus help India meet its emissions
reductions targets under Paris Agreement.

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।

A recent report by the Inter-governmental Panel on Climate Change (IPCC) highlights the impact of climate change on marine and coastal ecosystems.

Marine ecosystems-impact

- 1) Reduction in net primary productivity, leading to lower fish catch.
- 2) Growth of ocean deoxygenation zones, especially at Eastern Boundary Upwelling Systems (EBUS).
- 3) More stratified ocean water, leading to lesser mixing and lesser nutrient availability.

- 4) Damage to coral reefs - coral bleaching is estimated to continue even if 2°C goal under Paris is met
- 5) Species loss due to rising temperature and microplastics

Coastal ecosystems - impact

- 1) Sea level rise leading to saline ingress in coastal areas and aquifers.
- 2) Harm to coastal aquaculture
- 3) Endangering fishing grounds - e.g. Grand Banks of Newfoundland have seen drop in productivity
- 4) Increase in weather events such as storm surges.

Vulnerability of coastal populations

- 1) Small Island Developing States are doubly threatened by disaster risk and loss of tourism due to environmental degradation - e.g. CARICOM countries.
- 2) Sea level rise carries risk of submergence and structures being damaged - e.g. Indonesia is moving capital inland.
- 3) loss of traditional fishing incomes
- 4) Increased risk of diseases - e.g. due to harmful algal blooms.

Strict implementation of CRZ norms, disaster risk preparedness and diversification of coastal economy are necessary to protect coastal populations from 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।

Natural ecosystems are freely available sources of protection from disaster risk, especially important to India that ranks 5th in climate vulnerability.

Terrestrial ecosystems - Examples:

1) Presence of forestland reduces risk of landslides (15% of Indian area is prone) by providing soil conservation, barrier to soil slide etc.

2) Presence of lakes along river floodplains reduces flood risk by providing additional storage and channel diversion.

3) Groundwater resources are conserved due to presence of natural vegetation, reducing drought risk.

4) Naturally occurring vegetation with diversity of species maintains soil fertility and integrity.

Coastal ecosystems - Examples:

1) Presence of mangroves reduces impact of tsunamis, cyclones, storm surges etc. This was observed during the 2004 tsunami.

2) Natural vegetation along islands, fringing reefs reduce risk of above weather events.

3) Coastal fisheries, aquaculture also provide sustainable livelihoods, reducing economic aspect of disaster risks.

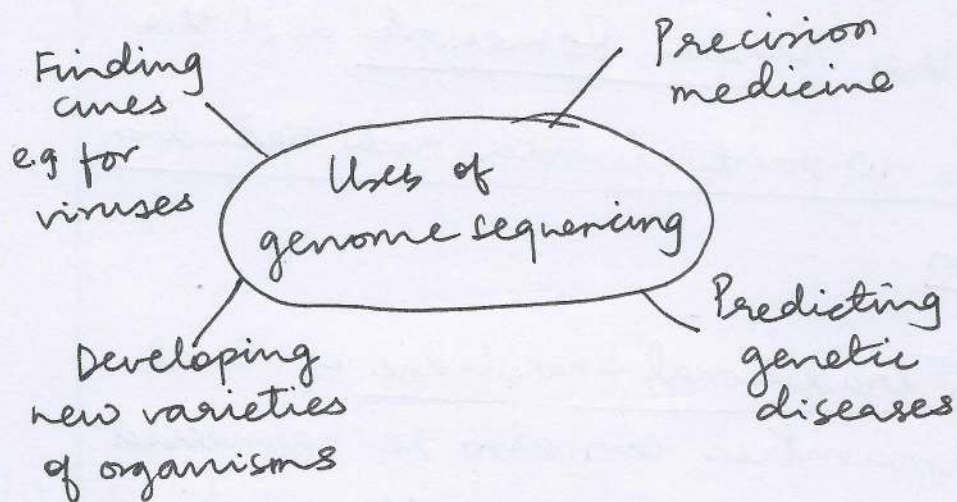
Thus protection of natural ecosystems represents a sustainable way to mitigate hazards, as recognised in the Sendai Framework and the PM's 10-point disaster risk reduction Plan.

The traditional knowledge of local communities can also be harnessed in this regard, along with practices such as sacred groves.

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

ब्याख्या 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 the deciphering of the entire set of base pairs in an organism's DNA, enabling scientists to obtain a complete genetic profile.



Challenges in scaling up

- 1) High investment costs for genetic material collection, storage,

experimentation etc.

- 2) Needs highly trained workforce
- 3) Concerns about privacy (especially for India with 3rd highest data vulnerability) of a person's medical records
- 4) Cybersecurity risks
- 5) low level of R&D in biotechnology in India - disproportionately low in private sector

IndiGen Project

- Carried out by DBT through CSIR.
- Aims to develop genetic sequences of 1,000 Indian individuals, in order to get an India-specific genetic map.

Uses :

- (i) Production of drugs and cures specially suited to Indian genetic makeup.
- (ii) Applications in research on migration history
- (iii) Better standing in international projects

Way Ahead

India must continue to work on collaborations outside, such as the recent GISAID initiative to sequence the coronaviruses (nCoV-19). Simultaneously, indigenous R&D must also be developed to retain and improve India's importance in biotechnology.

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 refers to the political use of violence at a large-scale to create instability and fear among populations and governments. Terrorism is more successful in countries with spread of radicalisation and social dissension.

Link with cyberterrorism

- Operates mainly through online recruitment and radicalisation - e.g. ISIS fighters
- Difficult to detect as no clear risk profiling has been possible
- Individuals facing marginalisation

and social distress are more susceptible.

- Social dissensions lead to spread of suspicion, mistrust and even fake news which are exploited by terrorists.

- Individuals experiencing isolation are especially prone to radicalisation

Links with transnational terrorism

- Cross-border terrorism succeeds when local support is available for arms smuggling, concealment of people etc.

- Radicalisation and social dissension increase likelihood of local populations aiding terrorists.

• Terrorists also make use of existing social tensions to distract security forces and obscure their agenda.

e.g. Cross-border terrorists and separatist factions in J&K

Way Ahead

Radicalisation needs to be reduced by developmental opportunities, education and employment, entrepreneurship (e.g. Roshni scheme)

along with vigilant cybersecurity especially in the Dark Net. Social dissensions need to be controlled by regulating media coverage, removing fake news and exemplary punishments for communal acts.

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 the present geopolitical scenario, India faces complicated security challenges that require radical reforms in our security architecture.

Emerging challenges

- 1) Renewed violence on Indo-China border
- 2) Sophisticated cross-border terrorism attempts
- 3) Heightened maritime insecurity due to geopolitical tensions
- 4) Nexus with local smuggling rings and organised crime in case of terrorist groups.

Integrated Theatre Commands refer to tri-service unified formations organised in distinct territorial pockets.

e.g. The Andaman & Nicobar Command has army, navy and air force components.

Importance

- 1) Ability to quickly mobilise, better than present system of single-service commands that take up precious time for coordination.
• Kargil Review Committee highlighted role of delays in force mobilisation.
- 2) Better inter-service coordination at command level cutting down complex procedures.

- 3) Possibility of rationalisation of armed forces numbers due to restructuring.
- 4) Positive experience of ANC in securing islands and sealanes
- 5) Unpredictability of nature of next attack - airborne, territorial, marine, or hybrid.

Thus integrated theatre Commands are an important defence reform. However, it will need considerable investment. In this regard, the Fifteenth Finance Commission received defence budgeting as a term of reference.