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GENERAL STUDIES (TEST CODE : 1524)

Name of Candidate	H S BHAVANA		
Medium Eng./Hindi	ENGLISH	Registration Number	13508
Center	ONLINE	Date	27/12/20

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
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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।

Around 80% of agricultural land holdings are less than 2 hectares (small and marginal) according to agricultural census.

Tenancy reforms = boost to agriculture

- * Increases agricultural productivity.
- * Absentee landlordism is resolved
- * Access to credit for tenant farmers
- * Push to Contract farming → better price realisation, diversity of crop.
- * Leads to land pooling → mass, profitable production.
- * Input resources can be shared.
- * Reduces exploitation of tenant farmers by land lords.

Concerns

- ⇒ losing ownership over land.
- ⇒ Sentimental attachment towards land.
- ⇒ misuse of lease agreements - subletting.

- * T. Haque committee was setup to draft a model land leasing act by NITI Aayog.

Model land leasing act.

- * Provisions for subletting of agricultural land.
- * Protects the ownership rights
- * A written tenancy agreement gives rights to tenant farmer.
- * Dispute resolution and Grievance redressal provisions.

Govt Schemes - PM SWAMITVA - aims to clear title land records by drone survey.

- * Bhoomi project of Karnataka - has digitised the land records in state.

Along with Farm laws, the Model land leasing act - can bring a turn around in Indian 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।

MSME contributes around 40% to the total manufacturing exports and 45% to manufacturing GDP. -

Challenges which restrict MSME exports

- * Quality standards - Non compliant with global WTO, BPS, Codex Alimentarius standards
- * Absence of Branding, marketing and advertisements.
- * Lack of forward, backward linkages to form a part of profitable Global Value chain.
- * Comprehensive MSME export policy is yet to be framed.
- * Inadequate technical knowledge, credit support is missing → leads to dwarfism, low productivity.
- * Policy issues - regulatory cholesterol prevent the growth of MSME.

Government Incentives

- * Changes in definition of MSME on basis of turnover and capital, merging service and manufacturing.
- * Production linked incentives scheme
- * Credit support - Mudra Bank, Stand up India, loan upto 1 cr in 59 mins.
- * Branding - Eco Mark, Silk Mark, Kashi, Indian Global Branding.
- * Case study of toys - Chennapatna - wooden toys, handicrafts - Kalamkari, Madhubani paintings - popular.
- * Tech and modern machinery support by R-TUFS, and other schemes.

MSME is the back bone of Indian manufacturing sector, which employs around 45% of rural labour and provides decent wage employment. The future of MSME - can be brightened to achieve 25% of GDP by Manufacturing sector. - by 2022

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 Oxfam report states that 10% of rich Indians own $\frac{3}{4}$ th of the country's wealth. After 1991 LPG reforms inequality GINI-coeff. is increasing.

Inclusive Growth

It is about providing equal opportunities for all to grow - socially, economically and politically.



Sustainable Development Goals

- Goal 1 - Zero Poverty.
Goal 2 - No Hunger.
Goal 4 - Equal Education.

Goal 3 - Affordable Health and well being.

Goal 5 - Gender parity.

Goal 8 - Decent Work & Economic growth.

Goal 7 - Clean energy.

* SDGs are the foundation to achieve Inclusive growth.

⇒ Parameters under Multidimensional Poverty Index (MPI) and Human Devp Index (HDI) = do include SDGs.

⇒ Inclusive growth is possible only with achievement of SDG 1, 2, 3, 4, 5 which forms the basic human needs.

Indias march to SDG + Inclusive Growth

* According to UNDP - India lifted 271mn out of poverty last decade. (SDG 1)

* Increased access to clean energy - LPG - Ujjawala to 93% households

* 85% have access to bank accounts - financial inclusion. (SDG 7)

* National Rural Sanitation Survey -

Success of SBA - 93 to 94% operational toilets.

With 'Sabka Saath, Sabka Vikas' and 'Swasth, Sundar, Surakshit Bharat' as moto Inclusive Growth & SDGs are inextricably linked.

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?

An increase in regional trade agreements, and trade blocks, increasing global protectionism, system of ROO, SPS, non tariff barriers have acquired importance.

Appropriate System of Rules of Origin

- Need :-
- 1) To provide trade concessions to required countries only
 - 2) Avoid dumping and protect interests of domestic industries
 - 3) Prevent Chinese goods - due to weaponisation of global supply chain.
 - 4) Effectively manage our trade deficit with countries.
 - 5) To abide by FTA agreement in letter and spirit.

The need for appropriate rules system of ROO is crucial during COVID - to avoid distress takeover by vested interests.

Steps taken by India

- * Opted out of RCEP - to safeguard domestic industries and avoid Chinese dumping.
- * Requirement by online market place, e-commerce aggregators like flipkart and Amazon to mandatorily mention Country Of Origin.
- * Special FDI rules for countries neighbouring India before investing in Indian companies.
- * WTO - MFN based rules for Trade and exports.

Clarity regarding ROO will help to keep out distortive trade practices followed by few countries while providing benefits to the real beneficiaries.

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।

"An assured price with an assured procurement are two planks of famine avoidance strategy"
- M. S. Swaminathan.

Food production in India. - Timeline

1947.	1967	1991	2015/16.
Ship to Mouth. PL 480	Availability - Green Revolution - PDS	* Affordable * Accessible * Available	* Surplus * Cereal Centric

Created for era of Scarcity. -MSP.

- * to overcome food deficit - and ensure basic food security.
- * fallout of green revolution.

Current Scenario ⇒ Record food grain production of 295mn tonnes according to FAO - more than 40% of perishables are wasted.

Relevance in Current eraIssues

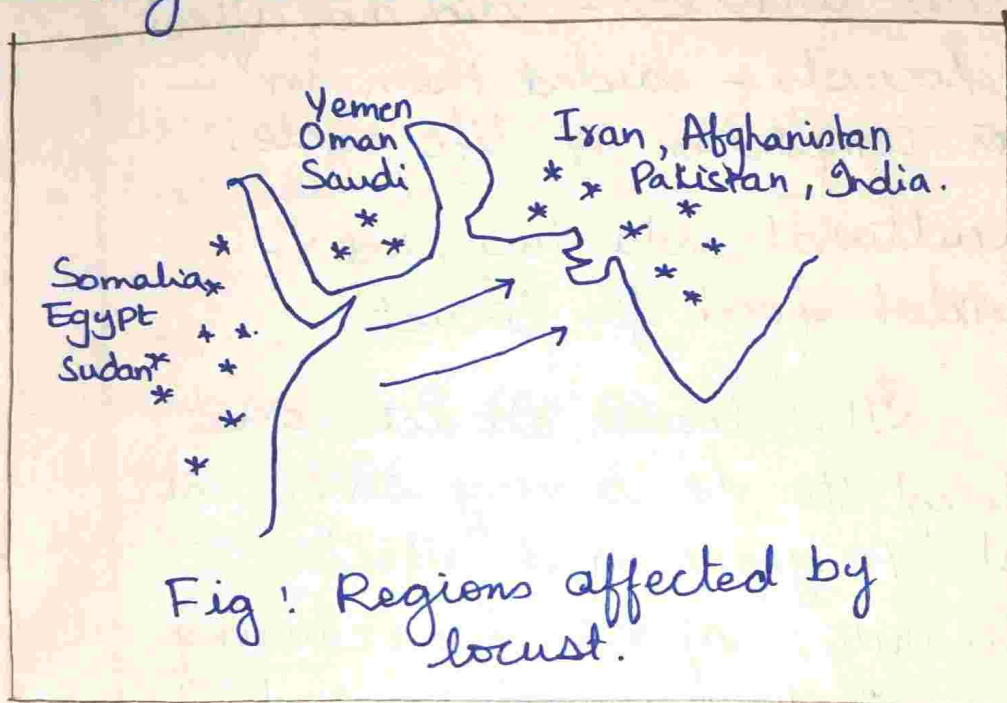
- * Market distorting - surplus production of cereals - diversification of crops affected - harms nutritional security.
- * Onus for procurement and redistribution leads to - restricted fiscal space
→ ↑ agricultural subsidy in form of MSP.
- * lack of choice of sale to farmers - in free market, affects farmer sowing decision
- * procurement if effective for only rice and wheat despite MSP for 22+1 (Sugar cane) crops. - less than 6% of farmers know about MSP before sowing.

By following recommendations of MS swaminathan Committee, Shanta Kumar Committee, Ashok Dalwai Committee and NITI Aayog - MSP should be the floor price, while simultaneously opening the agricultural markets for better price realisation and profits.

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।

The locust attack from West Asia, and East African regions - reached as far as Maharashtra and Karnataka during Summer in 2020.



Locust and Climate Change.

- ⇒ Increased global warming and temperature of earth.
- ⇒ Of last 15 years 11 years have witnessed extreme weather conditions.

- ⇒ Good monsoon with a positive IOD - led to availability of green grass - for locusts.
- ⇒ favorable wind get - to aid swarms of locusts in reaching far away places.
- ⇒ milder winters - did not affect the locusts - aided them in faster completion of life cycle.
- ⇒ Agricultural standing crops - provided food for locusts.

The locust attack was considered to be a very severe one in last 70 years and affects food security, apart from causing diseases. Techniques of bio pesticides, should be researched to prevent such attacks in 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 have immense applications across sectors because of the unique properties they possess.

Properties

- * Thermal and electrical conductivity
- * Malleable and ductile - flexible -
can be made into any shape -
wires, square sheets, cylindrical tubes
- * Inert nature of Carbon - When its
covalent bonds are formed - makes
it ready for any use.

Applications

- ⇒ In manufacturing tiny and critical electronic components for Super Computing, 3D printing etc.
- ⇒ In forming chemical sprays, dispersible compounds - due to quick and faster absorption.

- * In targetted drug delivery - for especially cancer patients.
- * In making technical textiles, research purposes, heavy electronic engineering goods, precision instruments etc.

Carbon nanotubes are versatile due to its size, property to slid over another atom, and Inert nature.

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 ranks 48 in Global innovation index by WIPO. The reasons for low innovation are multitude - ranging from Intellectual property protection, to patent rights, lack of domestic R&D low public spending on R&D $< 0.6\%$ of GDP.

Domestic patent regime privileges public health.

Need :-

- * Developing country with low PCI where OOPE - Out of pocket expenditure for medicines cost 60% of spending.
- * To provide for affordable and accessible healthcare.

Privilege to Public health over industry

- * No evergreening of patents accepted according to sec 3(d) of Indian patents Act.

- * Provision for compulsory licensing with or without consent of patent holder.
- * No new patents for minor tweaks in drug formulae.
- * Issues in past with Nexavar - Cancer treatment drug.
- * COVID- Pandemic situation - may lead to emergency compulsory licensing.
- * To cap the prices of drugs - so that it is affordable to poor population.
- * To support the generic pharma industry in India.

Patenting provisions in India are compliant with WTO TRIPS provisions and cater to protect the health needs while balancing the profit interests of pharma companies.

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 Indian land border extends for more than 15,200 Kms. across diverse geographical terrain and with different countries.

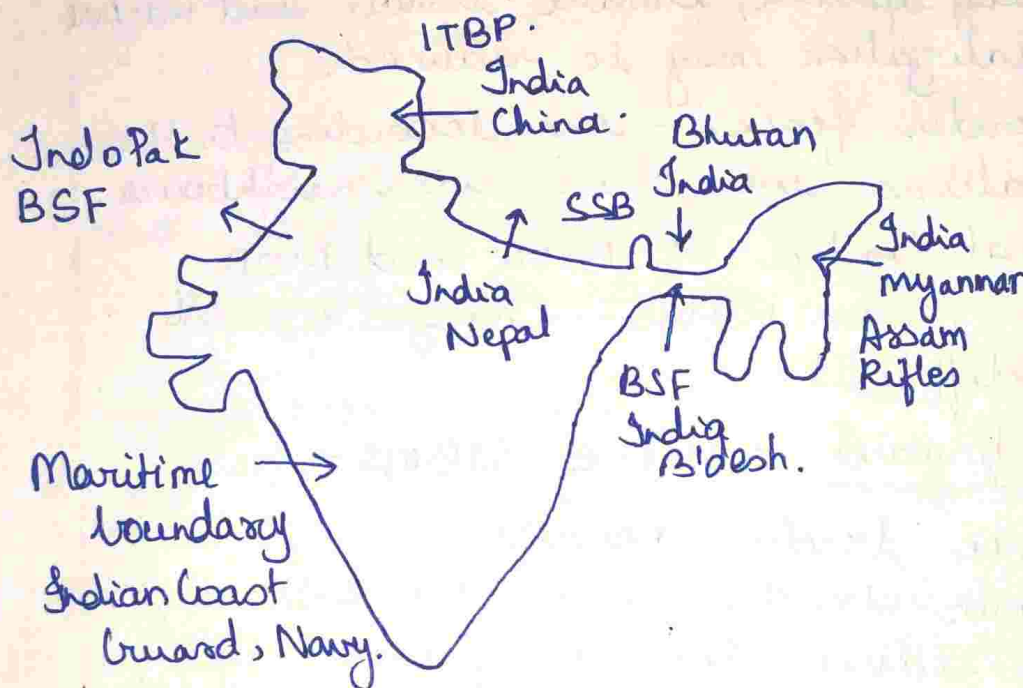


Fig: Indian Borders.

Principle of One Border One force.

- * Unified Command - Increases Coordination among forces - quick decision making.

- * Reduces the departmental hurdles in exchange of information, orders.
- * Quick response incase of infiltration easy coordination with army, & MHA.
- * Streamlined, Uniform structure, easy administration

Challenges.

- * Geographical, climatic terrain and warfare specialization may be reduced.
- * Border forces - one according to the relations we share with neighbours.
- * Dual Control of MHA and MOD over Assam Rifles - changes would be difficult

Way forward - Use of CBMS - to

enhance border security

- * Laser borders and drone surveys will reduce the manpower - especially in tough climatic Zones. eg: Siachen Glacier.

Reforms are required for a well battle ready hardened army supported by vigilant border forces to protect the national security.

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 frontier administrative Service (IFAS) to cater to North East and border areas was first mooted by P.M. Jawaharlal Nehru.

Need

- * To manage border difficulties and cater specifically to needs of civilians in border areas.
- * Diverse Nature of Indian borders would need a special force to address grievances and develop the region
 - India Myanmar - Jibal - Nagaland, Arunachal, Manipur, Mizoram.
 - India Nepal - Rote Beti Rishhta - UP, Bihar, Sikkim.
 - India China - Arunachal and ~~UT~~ UT of Ladakh.

Concerns

- * Can make Integration of border areas with mainland difficult.

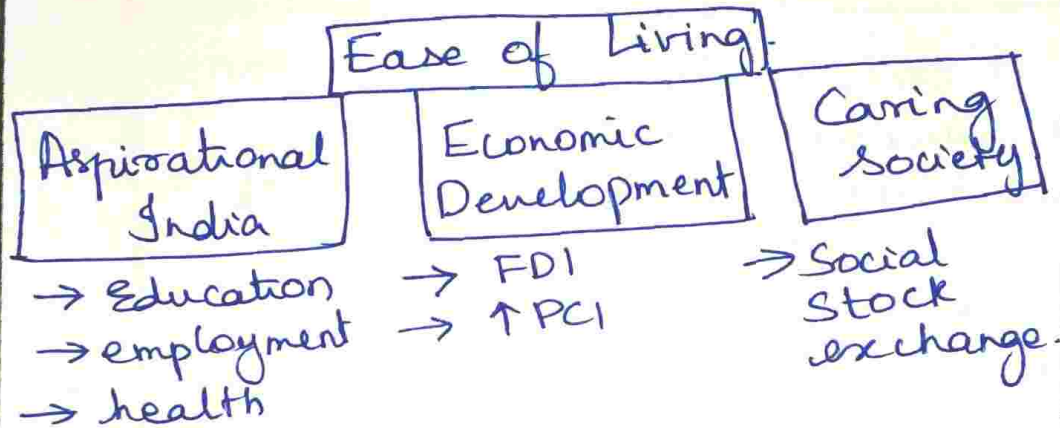
- * ~~Administrative~~ Administrative difficulties -
as it may lead to concentration
of power at single source.
- * Overlapping of functions and
increased work interference.

However a pilot implementation
can be taken up in select border
districts and can be expanded
by incorporating changes based on
the outcome. A good and secure
border with developed civilians is
the key to ensure security and
progress of India.

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।

"Ease of living" is a umbrella theme which is over arching numerous components and aims at providing a secure, prosperous, socially & economically developed India - \$5 trillion economy by 2025.



The Budget proposes a comprehensive framework.

Aspirational India

- * focuses on development of crucial sectors like agriculture, water, wellness and education.

Agriculture	Health	Education
→ PMKUSUM → Krishi rail → Krishi Udaan → ZBNF → eNam → Sagarmitra	PMJAY NIKSHAY Jal Jeevan PMMVY.	BHRUV EQUIP.

* Along with new agri farm Bills,
New education policy. for Education.

Economic development.

- Multi sectoral focus.
- * 12 Champion sectors.
- * interlinking manufacturing, skill, services and logistics.
- * to be a part of Global Value Chain "Networked India".

Industry - National Technical textiles mission
NIRVIK, TReDS, GeM.

Infrastructure - NIP, National logistics Policy
water ways, Arth Ganga.

New Economy - 4th IR, Quantum Computing
and BharatNet → Digital India.

Caring Society - To enhance social capital, increase social cohesiveness
→ ~~sto~~ social stock exchange.

women, child and social welfare -

BBBP, postan Abhiyan, manual scavenging.

Culture & Tourism -

Maritime museum at Lothal, development of iconic sites.

Environment - focus on International

Solar Alliance, Paris Climate INDCs and CDR1

The budget outlines a roadmap to achieve a \$5 trillion economy by 2025. Unforeseen COVID disaster and its fallouts have been tackled by Atmanirbhar package and RBI monetary policy.

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।

The farm bills will unshackle the agricultural sector and will open the agri economy - has been remarked by Amitabh Kant - NITI Aayog.

Challenges to be addressed

- * Input side - structural reforms in cropping, irrigation, soil health, quality seeds, harvest machines, fertilizers, pesticides are needed.
- * Awareness among farmers - about the marketing reforms, to prevent them from being misguided
- * Output side - Monopoly of APMCs, issues with MSP, floor market price realization, procurement issues, lack of storage and warehousing, food processing is at a nascent stage.
- * Structural - policy making - farmer side, consumer side, supply chain

issues plague the agricultural sector.

Other issues like - feminization of agriculture, disguised unemployment, monsoon dependency, lack of credit, technology fatigue, lack of Research and development.

Recent agricultural marketing reforms.

* Farmers produce facilitation and promotion bill.

→ eliminates the need for first sale to happen in APMCs.

Benefits

- * gives more choice to the farmer
- * eliminates middleman and APMC cartelization
- * effective price realization - avoids inflation - demand-supply mismatch
- * avoids cascading effect of prices, better value addition.

* Contract farming bill

→ regulates contract farming - an unlegislated area till now.

Benefits

- * price assured before harvesting - price guarantee
- * technological knowhow and awareness about cropping
- * diversification of crops.

ECA amendment

→ does away with limits imposed on hoarding.

Benefits

- * Improved warehousing infrastructure
- * Value addition of food produce.
- * ensures supply - avoids inflationary pressures.

These also have the concerns of excess corporatization of farming. "Putting the lamb before the wolf" according to Devendra Sharma. Recent protests have fuelled concerns.

The consensus based approach and collective decision making should pave way for a vibrant agricultural marketing reforms and growth - to enable "Doubling of farmer incomes."

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 a combination of multiple forms of transport for a seamless end to end delivery of goods and people.

Multiple integrations across different modes.

* Diverse and geographically vast country like India.

→ 14500km of Navigable rivers, National highways greater than 1 lakh km, rail track of third longest lengthwise among the world.

* Cost effective and speedy delivery.

* Delivery at door step - may need linkage of different forms of transport.

* One Nation One Card - Was to facilitate switching between and across public transports.

- * Ro-Ro services - introduced at
Pahej, Haldiya and IW-1.
- * Ro-Ro services by Indian Railways.

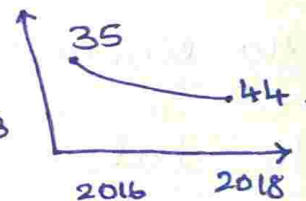
Challenges.

- ① Lack of multimodal connectivity
 - last mile links missing
 - poor planning of transport lines and cities.
- ② Transport spread across Ministries - Horizontal bifurcation and across Centre and State - Vertical division
 - Aviation, Railways, Road, Water and Shipping.
 - Urban transport - Rapid Bus transit, metro - under Municipality or States.
- ③ Policy planning and implementation hurdles - due to land acquisition, environmental clearances in road or any green field transport projects.
- ④ Checking, inter state barriers delay the efficiency of logistical delivery.

Opportunities.

- 1) One Nation One Card, Ro-Ro service success has paved way for more multimodal linkages.
- 2) Multimodal transport Act. to be reformed into National Logistical Advancement - NLEAPS Act.
- 3) Draft National Logistics Policy.
- 4) Learning from Japan- Multimodal transport best practices.
- 5) Fragmented transport chain, harms the logistical efficiency - having an overall impact on goods and delivery of competitive services

→ Logistics performance LP1 Index by WB showed of WB a decline.



The need of the hour is to improve the connectivity and provide efficient and effective connectivity across the country.

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 CMIE report analysis states that poverty rate will increase to 47% and unemployment increased to 27%. (lock down months - April-May)

Expose vulnerability of Informal sector

→ Contractual nature of jobs

- * poor social security
- * lack of protection against retrenchment.
- * gig economy - platform workers.

⇒ * No labour Unions to represent their woes in informal sector.

- * lack of adequate official channels to express grievance.

Eg - Wishon - Incident in Karnataka vandalized apple assembly unit.

⇒ Spiralling crisis → migrant issues, poverty and hunger aggravated.

* Exodus of informal workers from Urban Centers - like Mumbai and Delhi.

Eg - of Woman pulling a child on a trolley, and bicycle girl.

Opportunity to rebalance formal-informal economy dynamics.

1) Changes in Labour Codes -

Occupational Safety Code, Social Security Code, Code on wages, Code on Industrial relations.

⇒ Balance labour interests with that of employers.

⇒ Increase investments and attract FDI - increase employment opportunities.

2) Atmanirbhar Bharat Abhiyan -

"From Job Seeker to job Maker"

⇒ Push towards entrepreneurship changes in MSME definition, same for goods and manufacturing.

- 3) Ease of Access to Credit through MUDRA, Standup India, Startup India.
- 4) Push towards self employment - rebalance informal - formal economy.
→ PM Street Vendors fund.
- 5) Attract FDI in sectors like pharma, electronics - for formal employment.
eg: Samsung - largest Unit in UP
Apple - to invest
likewise - IZUZU, KIA in automobile sectors
- 6) push to digital - service based economy - due to COVID pandemic.

As India remained one of the most attractive destination for FDI, with revamped labour codes, social security schemes like PM Shram Yogi Mandan, APY, PM JJBY, PMSBY - labour protection and employment opportunities were created.

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।

Natural Gas is the cleanest and affordable source of fossil fuel energy. As Indian energy needs are to double by 2040 - Gas economy will help us achieve our energy targets in a sustainable manner.

Drivers → towards Gas Economy

- 1) Increasing energy demand - as a sign of our economic development and growth.
- 2) Need for diversification of energy basket - for a good energy mix.
- 3) Restructure the energy imports - currently India imports 80% of its fuel from West Asia.
- 4) Meet the INDCs - of Paris Summit - shift to more clean and sustainable energy source.

Challenges

- ① Adequate gas reserves - are yet to be located in India
→ Import dependency on Iran, Qatar - which lie in volatile West Asia.
- ② Technological and scientific changes to existing automobile
→ CNG buses in Delhi, CNG Autos and cars - as a success model.
- ③ Storage infrastructure, refining and distribution.
→ Uija Ganga Energy pipeline.

Steps taken by Government.

- ① Mapping of Natural Gas reserves in India and exploration.
→ Easy licensing under HELP.
→ Revenue sharing and open acreage policy.
- ② Storage infrastructure being built on the same lines as strategic petroleum reserves.

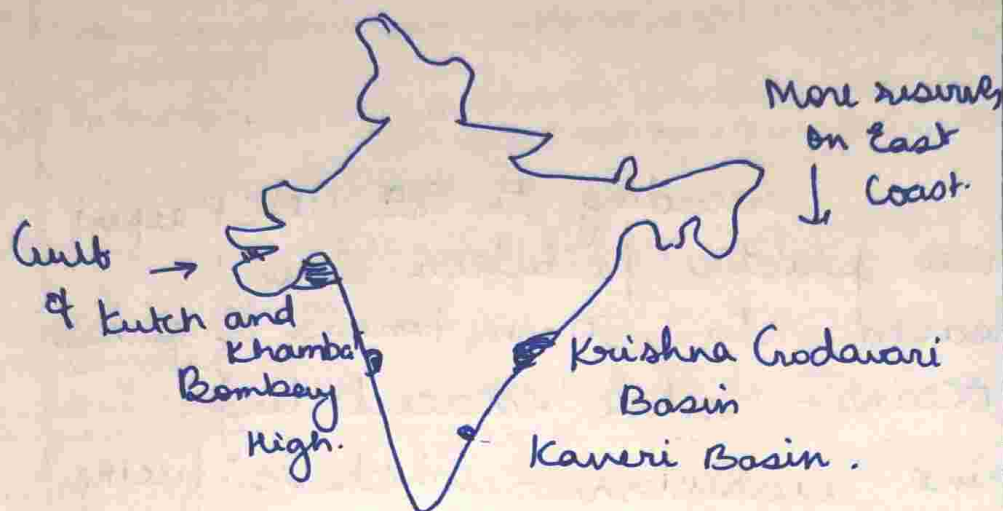


Fig: Natural Gas reserves.

3) New Natural Gas Policy - which aims to provide a holistic direction to use Natural Gas in

- transport
- fertilizer manufacturing
- other chemicals, industries.

4) Ujjala Ganga Energy pipeline, UJJALA-cooking gas supply scheme, LNG based urban transport.

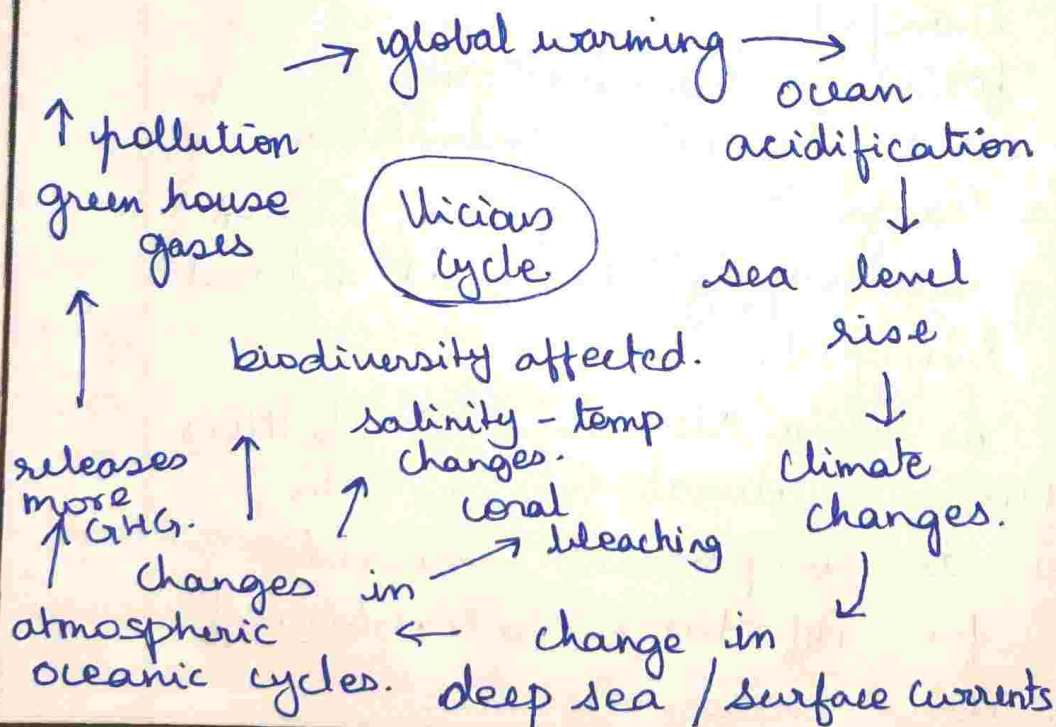
As India rises to meet its INDCs and SDG-8 Natural Gas is the answer to complement renewable energy for Affordable, reliable and Sustainable energy source.

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।

According to ~~the~~ UNEP report marine plastic pollution has increased to 50 mn tonnes of garbage in oceans - while exacerbating marine ecosystem - which is facing the double ~~scam~~ whammy of climate change and global warming.

Climate change - marine ecosystem linkage



→ Climate change and events like global warming lead to sea level increase, Arctic and Antarctic melting leading to irreversible biodiversity habitat damage.

⇒ Linkage with Coastal pollution.

* Marine plastic pollution, oil spills, tar balls - lead to eutrophication and algal blooms.

→ phenomenon like red tide increases.

→ ingestion of plastic/pollutants causes biomagnification and bioaccumulation - harming every species across the food chain.

→ can even cause extinction of certain species.

→ Great Pacific Garbage Patch, and Sargasso Sea - are gyres of marine pollutants.

⇒ Changes in Ocean currents, atmospheric climate changes linked with pollution can lead to phenomenon like El-Niño

to occur more frequently.

→ According to WMO - In last 15 years, 10 years were severely warm.

Positive Signs

- * Reduced Ozone layer depletion due to efforts under Montreal protocol
- * Increasing environmental awareness among public.
 - Fridays for future - Greta Thunberg
- * Eliminate Plastic Pollution Mission by India.

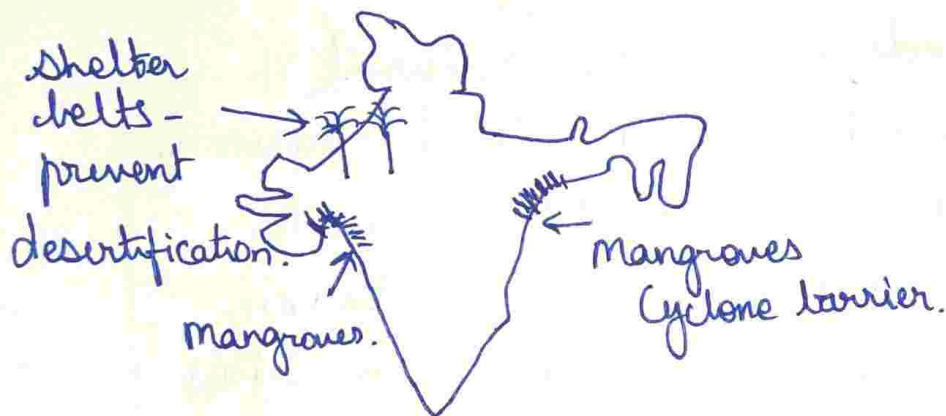
We all have one planet, and environmental health is vital to survival and growth of man. Thus sustainable development is the only answer to the global climatic and environmental issues.

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।

India is one of the countries most prone to natural disasters - with 60% prone to Earthquake, 12% to floods and 40% of Coastline to cyclones according to UN SDR.

Natural ecosystem to mitigate hazards.



Fig! Natural hazard mitigation.

- * Earthquake sensing - is observed in changing behaviour of few animals like dogs and birds
- * Mangroves across coastal regions act as cyclone barriers and protect the coastal habitat from damage.
- * Planting tall trees in desert region, around farming areas - like shelter belts - prevent wind erosion and desertification.
- * Wetlands - Act as natural carbon sinks and flood reservoirs as they store additional water during rainy monsoon season.
→ Same can be said for lakes and ponds.
- * Tall trees planted near coasts
→ Coconut trees, palm and areca nut in western ghats break wind velocity and wind shear.

* Trees planted along mountain
or hill slopes hold soil and
prevent top soil erosion -
along with avoiding land slides
~~and~~

The nature has its own
unique methods of hazard mitigation
some of which can be studied
and utilized to prevent destruction
during disasters and avoid economic
loss and loss of life.

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 is the genetic procedure in which the sequence of gene pair bases A-T-C-G present in the DNA are studied and its exact occurrence is recorded

Need :-

- * To study the genetic expressions
- * For DNA matching and profiling.
- * To know genetic disorders.
- * required genetic changes and gene repair.

Challenges

- 1) Technological and scientific knowhow about genome sequencing is limited.
- 2) Issues with data storage - of vast number of genes and space required
→ hacking, cyber crime, and cyber security issues.

③ Requirement of a proper legislation to provide consent for storage, use of gene data.

Indi Gen Project

- * By CISR and Cellular Institute Hyderabad is the largest Indian genome sequencing project
- Aims to study and sequence the genes of all ethnic Indians
- Used for :-
 - * Predictive and preventive medicine for rare genetic disorders.
 - * Mapping of indigenous tribes and statistics use.
 - * Gene study and repair,

It is on similar lines of World Genome project and this project will protect and map the critical gene data of all Indian races.

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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।

According to report by Global Terrorism Index India ranks 7th among the countries affected by terrorism.

Avert radicalization and societal dissention.

- * Increasing lone wolf attacks.
- * Recruitment to ISIS, Al Qaeda and other terror organizations
- * Increased presence of sleeper cells and Over Ground Workers.
- * Nexus between Naxalites, Maoists and terror groups.
- * Heightened social tensions leading to
 - communal riots - Delhi riots
 - mob lynching - Palgarh case
- * Societal, institutional reasons for targeting of particular community making them vulnerable for indoctrination

Breeding ground for transnational terrorism

- ↳ Use of Social Media - Twitter, FB to recruit and indoctrinate youth. eg. Mehdi Masoor.
- ↳ plan and carry out pre planned terror attacks.
eg: Bangalore riots.
- ↳ Role of foreign funds for allurements and radicalization of vulnerable youth. -
from Saudi, ISIS - Wahabism.
- ↳ forceful conversions and increasing social tensions.

Need of the hour.

- * De radicalization and counter radicalization programmes.

Best practice - UK's Consent program.

- * Strong family and social structure to avoid youth from being radicalized.
- * Role of Media, Social Media and messaging platforms to avoid circulation of hate messages and radicalized content.

While India is surrounded by hot beds of terrorism in West it should protect its internal security and maintain communal harmony and 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।

India is surrounded by two nuclear capable neighbours - China in North and North East and Pakistan to our west.

Emerging security challenges.

- ↳ Incidents of Chinese aggression at Galwan Valley - Ladakh.
- ↳ Similar incursions at Doklam plateau region last year.
- ↳ Terror attacks by Pakistan - In Pulwama, Phatankot and continued infiltration - incursions at J&K.
- ↳ Chinese Submarine presence at Sri Lanka - Indian Oceans.

National Security and integrity can be protected by establishing Integrated Theatre Commands.

Integrated Theatre Command - Defence Reform.

- 1) Reforms to include a common integrated theatre for all 3 defence forces of Army, Navy and Air force
- 2) Increased coordination and data exchange - avoids duplication of efforts and mis management.
- 3) presently only Andaman & Nicobar Islands have a tri service command.
- 4) Chief of Defence Staff - is a step to achieve Integrated Theatre Command.
- 5) Ease and efficiency of operations, logistics resources management - quick response to defence threats can be achieved.

Protection of National territorial sovereignty and secure the safety of Indian citizens is the fundamental duty of state - Defense reforms are a step in the right direction for a bright and safe future.