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GENERAL STUDIES (TEST CODE : 1511)

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Medium Eng./Hindi	English	Registration Number	54473
Center	ORD	Date	26/11/21

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
3	10	
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11	15	
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14	15	
15	15	
16	15	
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.

All the Best

1. Despite a vast coast line and a number of waterways, why has India not been able to achieve its potential in bringing a significant modal shift from rail and road to waterways? (150 words) 10

विस्तृत तट रेखा और अनेक जलमार्गों के बावजूद, भारत रेल और सड़क परिवहन प्रणाली से जलमार्गों की दिशा में महत्वपूर्ण प्रणालीगत परिवर्तन (मोडल शिफ्ट) करने हेतु अपनी क्षमता को सार्थक करने में क्यों असमर्थ रहा है?

India has 8000 km of coastline and number of waterways like Allahabad - Haldia [NW-1], Dhubrisadi & [NW-2], Kottam-Kollayan [NW-3], etc.

Reasons for India not achieving potential to shift from road/rail to waterways

- Roads and rails are conventionally used for transport and hence behavioural shift is needed to harness waterway.
- Lack of infrastructural amenities as it is on roads and rails.
- The business are not connected to prominent road and rail network.

- Rivers also change course frequently.
- Climate change affects the waterways most with untimely storms and rainfall.
- Lack of ship building infrastructure.
- The waterways are not connected to geographically ~~the~~ hinterland areas.

Way Ahead

- Inter linking of rivers.
 - Effective implementation of Sagarmala project and connecting it to Bharatmala.
 - Building multimodal and integrated port terminals for seamless transfer of goods from road/rail to waterways.
 - frequent dredging of rivers.
- waterways are cheapest source of transport and would ease logistics in India

2. The move to establish a National Bank for Financing Infrastructure and Development, to reverse the drag on India's growth potential will have its own set of challenges. Discuss. **(150 words) 10**

भारत की संवृद्धि क्षमता संबंधी अवरोधों को व्युत्क्रमित करने के लिए एक राष्ट्रीय अवसंरचना वित्तपोषण और विकास बैंक की स्थापना के कदम की अपनी स्वाभाविक चुनौतियां होंगी। चर्चा कीजिए।

NBFID was announced in Budget 2021-22 to finance the infrastructural needs of the country.

(Current situation of India's economy)

- 4% growth rate since 2015-16.
- Further deterioration due to COVID pandemic
- Reduction in investment to GDP ~~for~~ and is presently at 29% of GDP while 36% of GDP is the need.

Advantages of NBFID

- will help in India's national ~~tasks~~ infrastructure pipeline.
- provide long term loans to infrastructure projects.

→ Improve the job situation of the country.

Challenges

→ The private sector is not coming forward and take loans to invest in infrastructural projects.

→ Due to toxin balance sheet problem of NPA in banks and corporates the NBFIID may be averse to lending.

→ The NBFIID might itself be short of funds. Infact the currently ~~of~~ outlay of 20000 Cr in NBFIID is termed by critics as insufficient.

→ Further improvement needed in India's business culture with better enforcement of contracts and land acquisition.

NBFIID would play a crucial role in realising the dream of US\$ 5 Trillion economy by 2025.

3. Highlighting the issues related to the current fertilizer subsidy regime in India, discuss the need for reforms in this context. (150 words) 10

भारत में वर्तमान उर्वरक सब्सिडी व्यवस्था से संबंधित मुद्दों को रेखांकित करते हुए, इस संदर्भ में सुधारों की आवश्यकता पर चर्चा कीजिए।

Fertiliser is a key input in farming. In fact India is one of the largest users of fertilizers.

General fertilizers:

- Nitrogen (urea)
- Phosphorous
- Potassium.

Issues related to current fertilizer subsidy regime

- It is heavily skewed in favour of urea.
- The fertiliser subsidy does not directly come under farmer account but ~~first~~ in the account of the seller.
- Problems in Aadhar system sometimes lead to denial of subsidy to the needed.
- Fertiliser dependency is high in

India due to importance of fertiliser
subsidy raises fiscal deficit.

Need for reforms

- To reduce the input cost of farming.
 - To rationalise subsidy by also including urea under nutrient based subsidy and prevent overuse of urea by farmers.
 - To make fertilisers affordable.
 - To reduce dependence of farmers on fertilisers and promoting organic farming.
 - To ensure subsidy is not just concentrated in the hands of big farmers.
- Hence fertiliser subsidy ^{reforms} would not just make farming affordable but help in mitigating challenges of climate change.

4. Identifying the need for a climate resilient agriculture in India, discuss how it can be achieved. (150 words) 10

भारत में जलवायु प्रत्यास्थ कृषि की आवश्यकता की पहचान करते हुए, चर्चा कीजिए कि इसे कैसे प्राप्त किया जा सकता है।

India is one of the top countries in the Climate vulnerability Index. Climate resilient agriculture refers to use of sustainable practices in farming that can withstand the climate uncertainties.

Need for climate resilient ~~infrastructure~~ agriculture

- Most of the poor rely on farming as the means. Also most poor would be most affected by climate change.
- To ensure food security of the nation even in times of severe climate change phenomena.
- To reduce further deterioration of climate as current practices release greenhouse gas emissions.
- To make the farming affordable

for the poor farmer.

Steps to achieve climate resilient
~~in~~ agriculture

- Adoption of sustainable farming techniques like mixed farming, double cropping.
- Increasing diversification to climate resilient crops like millet.
- focussing on aquaculture and animal rearing.
- Adoption of zero budget natural farming (ZBNF) techniques.
- Adequate information dissemination through Kishi Vigyan Kendras.

Climate resilient agriculture would help in achieving vision of inclusive growth in agricultural sector.

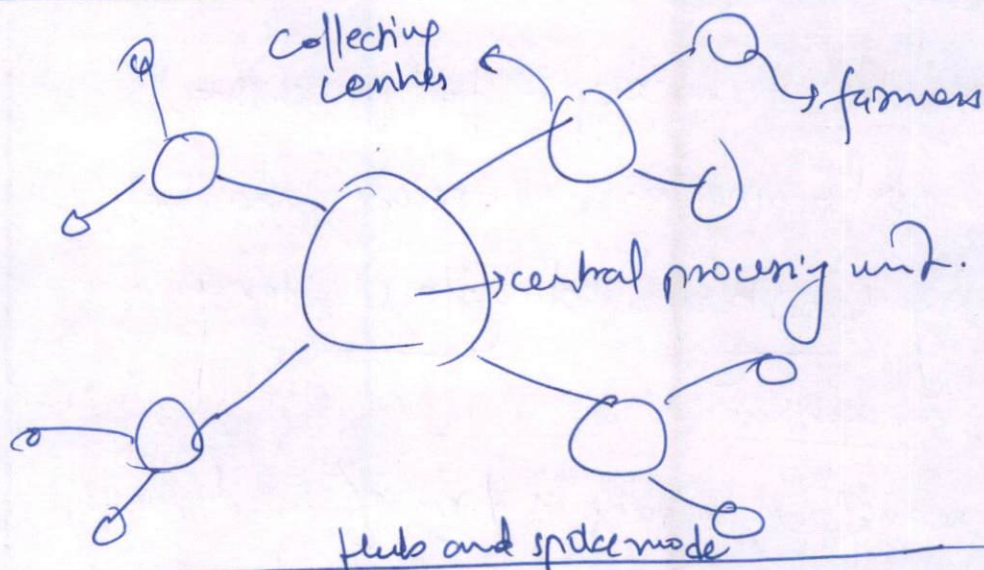
5. Mega Food Parks (MFPs) were considered to be a gamechanger for the food processing sector in India, but their progress remains stunted. Discuss.

(150 words) 10

मेगा फूड पार्को (MFPs) को भारत में खाद्य प्रसंस्करण क्षेत्र के लिए एक महत्वपूर्ण चरण (गेमचेंजर) समझा गया था, लेकिन उनकी प्रगति अभी भी अवरुद्ध है। चर्चा कीजिए।

India has huge potential in food processing sector upto \$30 Billion and provide upto 9 lakh employment by 2025.

- FICCI.



Reasons for considering MFPs as gamechangers

- provide employment in the informal sector.
- provide employment to vulnerable sections like SCs, STs and women

by promotion of Self Help Groups.

→ Lead to Increase in exports and forex.

→ would help the farming community by giving better prices for produce.

Why progress remains stunted

→ Lack of investment and credit from formal sources like banks.

→ Obsolete technology in food processing.

→ Import restrictions in foreign markets citing sanitary and Phyto sanitary measures.

→ Lack of connectivity in form of roads, rails, ports from factories to market.

→ Land acquisition issues in making mega food parks.

MFLs have potential to increase employment and exports in the near future.

6. Give an account of the challenges associated with rapidly increasing biomedical waste in India. Also, state the key features of the Bio-medical Waste Management (Amendment) Rules, 2018. **(150 words) 10**

भारत में तीव्रता से बढ़ रहे जैव-चिकित्सा अपशिष्ट से जुड़ी चुनौतियों का विवरण दीजिए। साथ ही, जैव-चिकित्सा अपशिष्ट प्रबंधन (संशोधन) नियम, 2018 की प्रमुख विशेषताओं का भी उल्लेख कीजिए।

Biomedical wastes are the wastes associated with the medical sector. These include used sanitary napkins, unused medicines, diagnostic machines, used cotton swabs for testing, injections, etc.

Challenges with rapidly increasing bio-medical waste in India

- Lack of storage infrastructure of bio-medical waste. Special containers are needed.
- Lack of segregation at source and most of the times biomedical waste is mixed with general waste and disposed off on landfills.

- Lack of accountability of hospitals in disposing off biomedical waste.
- Lack of specialised bins for collecting biomedical waste.
- People are not aware how to dispose off biomedical waste.

Key features of Biomedical waste management Amendment rules, 2018

- Segregation of biomedical waste at source.
- Fine for 'improper disposal bio-medical waste'.
- District authorities to place special dustbins at ~~promin~~ public places for biomedical waste collection.
- Responsible bio-medical waste disposal and recycling without harming the environment.

Hence effective disposal of biomedical waste is needed.

7. What do you understand by impact based forecasting in disaster management? How can such forecasting strengthen the disaster management preparedness? (150 words) 10

आपदा प्रबंधन में प्रभाव आधारित पूर्वानुमान से आप क्या समझते हैं? ऐसा पूर्वानुमान आपदा प्रबंधन की तैयारियों को कैसे मजबूत कर सकता है?

Impact based disaster management forecasting refers to making an estimate of the likely material and non-material impact that an impending disaster can cause.



How impact based forecasting strengthens disaster management:

- Helps to better assess the economic, social and environment loss due to a disaster.

- Better targeting of region and audience
- Effective utilisation of available resources.
- mitigates the actual impact of the disaster.
- Helps in rehabilitation efforts.
- Helps in integrated response to disaster.

Steps to achieve impact based forecasting

- Better investment in available technologies.
- Better training of NDRF personnel.
- Public awareness campaigns.

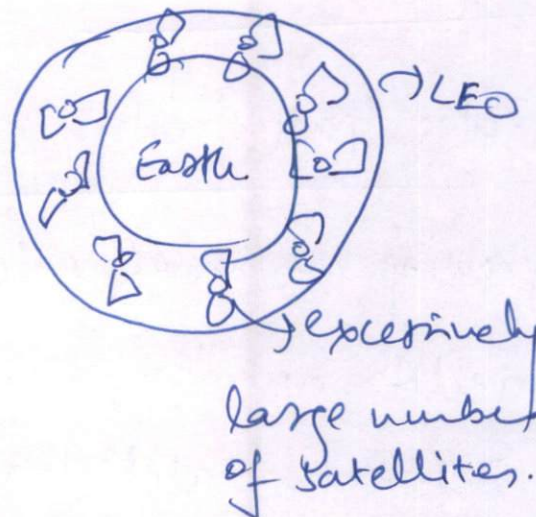
Hence impact based forecasting is an effective way to achieve targets of Sendai Framework for disaster management.

8. Low Earth Orbit is becoming increasingly crowded as countries race to launch satellites into space. Highlighting the associated issues, discuss international efforts taken in this regard. **(150 words) 10**

देशों द्वारा अंतरिक्ष में उपग्रहों को प्रक्षेपित करने की बढ़ती होड़ से निम्न भू-कक्षा में इनका संकेद्रण बढ़ता ही जा रहा है। इससे संबंधित मुद्दों को रेखांकित करते हुए, इस संबंध में किए गए अंतर्राष्ट्रीय प्रयासों पर चर्चा कीजिए।

Low Earth orbits refer to the orbit of the earth with a range of 300-500km.

Crowding of LEO :



Issues with crowded LEO

- Affects the functioning of satellites due to cross-connection between one satellite and other.
- The satellites may crash into one another.
- Also since they are close, if

one satellite is hit by space ~~ast~~ asteroid, it will affect many satellites in its vicinity.

→ If the satellites crash, high amount of space debris is created.

International efforts

→ Outer Space Treaty, 1967 to manage growing number of satellites, Anti satellite missiles.

→ Defunct satellites are being withdrawn.

→ EU and Japan are leading efforts to reduce space debris to prevent it from colliding in any satellite.

Hence efforts must be taken to reduce ~~the~~ overcrowding of LEO.

9. Enumerating the existing measures to counter bio-terrorism in India, highlight the need for a bio-terrorism law. (150 words) 10

भारत में जैव-आतंकवाद का मुकाबला करने के लिए मौजूदा उपायों को सूचीबद्ध करते हुए, एक जैव-आतंकवाद कानून की आवश्यकता को रेखांकित कीजिए।

Bio-terrorism refers to use of biological agents like viruses, chemicals to ~~use~~ make bombs and attack the enemy country. Ex: Orange gas, Anthrax, etc.

Existing measures to counter bio-terrorism in India

→ Such activities are investigated by the National Investigation Agency (NIA).

→ India's nuclear doctrine states that India can resort to use of nuclear weapons if bio weapons are used in its territory or its personnel.

seeing outside.

Need for Bio terrorism law

- To define in concrete terms what constitutes bio terrorism.
- The Annex of law could contain list of agents that are classified as bio-terrorism.
- To make specialised courts to deal with bio terrorism cases.
- To establish punishment for bioterrorism activities.
- To follow the global best practices.
- To aware its citizens about the concept of bio terrorism.

Hence a bio terrorism law would go a long way in securing India's internal and external security.

10. Discuss the potential of "Integrated Law Enforcement Centres" and "Smart Walls" on India's border areas to address the prevailing security challenges.

(150 words) 10

मौजूदा सुरक्षा चुनौतियों से निपटने के लिए भारत के सीमावर्ती क्षेत्रों में "एकीकृत कानून प्रवर्तन केंद्रों" और "स्मार्ट वॉल" की क्षमता पर चर्चा कीजिए।

India has long land border that it shares with 6 countries and a coastal border of 7500km.

Prevailing border security challenges

- Insurgents in north-east use porous borders to travel inside and outside.
- Transfer of ammunitions and militants in extremist hit regions of Kashmir.
- Illegal trade of drugs along North East and Punjab border.
- Illegal ~~to~~ cattle trafficking and human trafficking via Nepal and Bangladesh border.

→ Illegal entry of terrorists via land and sea borders.

Potential of Integrated Law Enforcement Centres and Smart Walls on India's border

→ Helps check illegal migration and drug trafficking.

→ Better co-ordination among various stakeholders & ~~law~~ Border police, state police, governments of both the neighbouring countries.

→ Addressing non-traditional security challenges at borders like drone attacks, naxal-terror, organised crime, etc.

Hence integrated law enforcement at borders would strengthen India's security.

11. Farm loan waivers are neither adequate nor recommended for promoting sustained agricultural growth. Analyse. (250 words) 15

सतत कृषि विकास को बढ़ावा देने के लिए कृषि ऋण माफी न तो पर्याप्त है और न ही अनुशंसित। विश्लेषण कीजिए।

farm loan waivers refer to waiving off farm loans and the borrower is not liable to pay the principal/interest.

In India, 55% of population is engaged in agriculture which contributes to 16% of GDP.

Why farm loans are not adequate

- The total amount of bad loans surpasses the amount that is waived off.
- The agriculture crisis is more than just farmers overburdened with loans.
- Once the loans are waived off, new loans are disbursed, and hence again demand of loan waivers start to happen.
- Farm loan waiver addresses only the input part while output part

relating to agricultural marketing is left
unaddressed.

Why farm loan waivers are not recommended

- Hurts the balance sheet of the banks,
thus their NPA rise.
- If these farm loans are paid by the
government, it is done through
taxes that can be used for asset
creation.
- Hurts the credit culture of the
people since people anticipate that
once new farm loan waivers are
announced they would not need to
pay their present loan.
- Only benefits the large farmers
who constitute 14% of all farmers.
This is because the small

borrowers are already excluded from the formal credit culture and rely more on informal money lenders.

→ Bank officials become averse to giving loans to farmers for fear of not getting back due to loan waiver.

way forward

→ farm loan waivers must be ~~resorted~~ resorted to only in extreme cases.

→ focussing on input like better seeds, monetary transfer, fertilizer availability

→ focussing on agri marketing like reforming APMCs so that farmers get better price.

Focus should be to address the problem holistically to double farmer's income by 2022.

12. A number of initiatives in recent years have focussed on the MSME sector. Why is there a need to focus on this sector? Also, identify the measures taken by the government and further scope of action. (250 words) 15

हाल के वर्षों में अनेक पहलों ने MSME क्षेत्रक पर ध्यान केंद्रित किया है। इस क्षेत्रक पर ध्यान केंद्रित करने की आवश्यकता क्यों है? साथ ही, सरकार द्वारा उठाए गए कदमों और आगे की कार्रवाई के दायरे की पहचान कीजिए।

Micro, small and medium enterprises (MSMEs) form the backbone of the economy by providing employment to 111 million and contributing to 45.1% of the GDP.

Need to focus on this sector

- Supports the informal sector which constitutes 90% of the total workforce.
- An important tool for inclusive growth as it employs women, SCs, STs, etc.
- Contributes to one-third of manufacturing GDP and would help in realising goal of increasing manufacturing sector's contribution to 25% of GDP.

- Contributes to one-third of exports.
- Many products like Kandamahal haldi, Kosogulla that have been accorded GI tags are made in MSME sector.
- Helps to absorb surplus and casual labour from farming sector.
- Helps in alleviating poverty through employment.

Measures taken by government

- TREDS platform by RBI for MSMEs to get their stuck payments from large corporates in a timely manner.
- Loans under 59 minutes upto 2 crore.
- GSF to formalise the sector and helping in getting timely credit.
- CeM platform where it is mandatory

for the PSUs to buy atleast 25% of their products from MSMEs.

- SAMPRIC portal for job seekers to get jobs in MSMEs.
- RODTEP scheme for export promotions.
- MSME Nivesh portal for capital infusion.
- One district one product for boost to local employment.

Further scope of action

- use of Artificial intelligence to augment capacity of MSMEs.
- Implementation of labour law reform to increase size of MSME (Economic Survey)
- Availability of finance at cheap rates from banks.

Amravisbhai Chawat would further help in reforming the MSME sector.

13. Skilling the Indian population faces a 3E challenge - Education, Employment and Employability. Discuss. Also suggest interventions required to effectively manage this challenge. (250 words) 15

भारतीय जनसंख्या को कौशल युक्त बनाने में 3E चुनौतियों, यथा- शिक्षा (एजुकेशन), रोजगार (एम्प्लॉयमेंट) और नियोजनीयता (एम्प्लॉयबिलिटी) का सामना करना पड़ता है। चर्चा कीजिए। साथ ही, इन चुनौतियों का प्रभावी ढंग से प्रबंधन करने के लिए आवश्यक हस्तक्षेपों का भी सुझाव दीजिए।

Only half the graduates are employable with requisite skills.

—India Skills Report, 2020

Challenge of Education

→ The Gross Enrolment Ratio at higher education level is only 25%.

→ There is mismatch between demand of industries and ~~the~~ curriculum taught in universities.

→ Most of the higher education is in English language. Thus rural youth is left out.

→ Most engineering/management colleges

are in metro cities, hence youth especially the female ~~are~~ find them unaccessible.

Employment

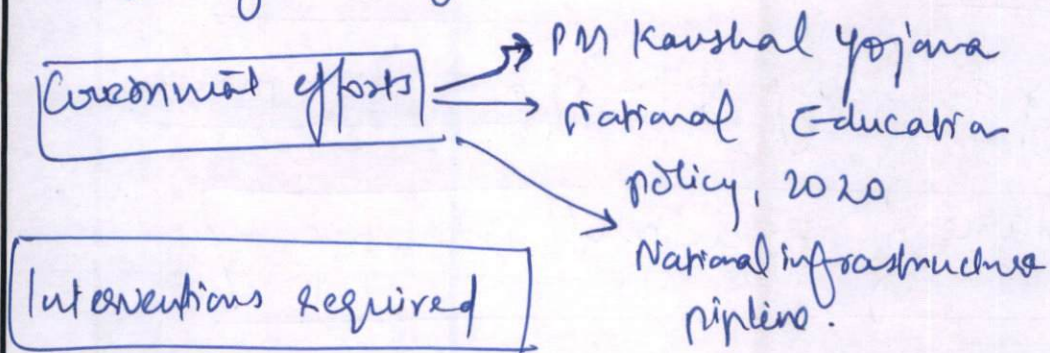
- The number of youth entering job market is 18 lac/year while only 2 lac jobs are generated per year.
- Due to COVID and slowing economy, companies are not hiring, rather firing existing employees.
- Due to advent of artificial intelligence and robotics, companies are replacing labour with machine.
- Privatisation of PSUs is further reducing jobs.

Employability

- The Kaushal Vikas Kendras are

running at below capacity. Many have been closed down.

→ Due to poor state of ITIs and polytechnic colleges, we have labours that has skills in low end jobs but not enough skilled for high end jobs.



→ Redesigning the college curriculum to ~~manage~~ skill the youth for 21st century jobs.

→ Increasing capital expenditure to at least 36% of GDP to generate more jobs.

→ Increasing gross enrolment-ratio to 50% as recommended by NEP 2020.

Hence skillup the youth is essential requirement to realise vision of "New India"

14. Despite its importance, agricultural marketing faces various institutional and infrastructural related issues in India. Elaborate. Also, enlist the measures that have been taken in this context. **(250 words) 15**

अपने महत्व के बावजूद, कृषि विपणन को भारत में विभिन्न संस्थागत और अवसंरचना संबंधी मुद्दों का सामना करना पड़ता है। सविस्तार वर्णन कीजिए। साथ ही, इस संदर्भ में किए गए उपायों को भी सूचीबद्ध कीजिए।

Agricultural marketing refers to the frontend activities in agricultural sector relating to selling of the agricultural produce.

Importance of Agricultural marketing

- Helps to realise value of the farmer produce.
- Increases income of the farmer.
- Connects buyer and seller.
- Helps to ~~distribute~~ ~~food~~ prevent the situation of food shortage and food inflation.
- Helps in exporting of farm produce.

Institutional issues in agricultural marketing

- Lack of private sector participation as compared to developed countries.
- The APMC structure that mandates farmer to only sell it in APMC.
- Due to limited buyer in APMC, the farmers are not able to realise the true value of their produce.
- The agricultural product is taxed in inter-state movement, hence leading to increase in cost.

Infrastructural issues in agricultural marketing

- The APMC mandis lack weighing and apparatus and grading machines.
- Lack of storage infrastructure in the form of warehouses and cold storages.

→ Lack of connectivity in the form of road network and train/plane to and fro from mandis.

Measures that have been taken

→ Agricultural produce and marketing guidelines issued by NTI Amog to states to reform APMC mandis.

→ Agricultural infrastructure fund of 1 lakh crore to ~~redede~~ develop infrastructure of mandis.

→ Kisan Rail and Krishi Udan to connect mandis with markets through train and plane.

Way forward

Agricultural marketing reform is crucial for doubling the farmer incomes by 2022.

15. Marine litter is not just an environmental issue but poses a socio-economic challenge as well. Discuss. Also, enumerate the initiatives taken by the global community to reduce marine litter. (250 words) 15

समुद्री कचरा न सिर्फ एक पर्यावरणीय मुद्दा है, अपितु यह एक सामाजिक-आर्थिक चुनौती भी खड़ी करता है। चर्चा कीजिए। साथ ही, समुद्री कचरे को कम करने के लिए वैश्विक समुदाय द्वारा की गई पहलों को भी सूचीबद्ध कीजिए।

Marine litter refers to pollution caused due to waste and plastic that is washed off and finds refuge in oceans and seas.

Marine litter : environmental issue

- Increases pollution and disturbs aesthetics of beaches and water bodies.
- Leads to biaccumulation of toxic elements in the fishes, that many times land up in people's stomach.
- Leads to soil pollution and reduces soil's ability to regenerate marine plants.
- Leads to coral bleaching.

Marine litter : socio-economic challenge

- Reduction in population of fishes affects dietary pattern of coastal communities.
- Also, reduction in fishes leads to decline in pisciculture and reduces income of fishing community.
- The toxic wastes from fish to market lead to health issues for generations to come.
- The capacity of coastal ecosystem to tackle cyclone and Tsunami reduces due to marine litter.

Initiatives taken by global community

- London Convention talks of cleaning the seas and making them litter

free.

- UNEP has come up with various initiatives to tackle marine litter.
- ~~Blue~~ Blue Flag beaches are being promoted to incentivise clean beaches.
- India's coastal management rules talk of tackling issue of marine litter.

Way forward

- Raising level of awareness regarding marine litter.
- Reducing reliance on crude oil as energy source, thus reducing oil spills.
- Binding commitments from nations on cleaning seas.

People's participation is needed to solve the problem of marine litter and achieve SDG goal 14 [Life on water]

16. Assess India's vulnerability to flash floods and suggest measures for better resilience to flash floods. In this context, also briefly highlight the significance of recently launched Flash Flood Guidance System (FFGS) operated by the Indian Meteorological Department (IMD).

(250 words) 15

आकस्मिक बाढ़ के प्रति भारत की सुभेद्यता का आकलन कीजिए और इसके प्रति बेहतर लचीलेपन के उपायों का सुझाव दीजिए। इस संदर्भ में, हाल ही में आरंभ की गयी तथा भारत मौसम विज्ञान विभाग (IMD) द्वारा संचालित आकस्मिक बाढ़ मार्गदर्शन प्रणाली (FFGS) के महत्व पर भी प्रकाश डालिए।

Flash floods are disasters that strike an area when a river overflows due to intense rain in a short duration.

India's vulnerability to flash floods:

- India's majority of population lives in Ganga-Yamuna belt which is prone to flash floods.
- Flash floods lead to avalanches and landslides in hilly regions.
- Recently flash floods have led to urban flooding in cities like Hyderabad, Lucknow and Chennai.

Measures for better resilience to flash floods

- Prior warning systems in major flash flood prone regions.
- Resilient infrastructure to withstand flash floods.
- Greenspaces and urban forests to create sponge cities to absorb excess water.
- Regional NDRF teams trained specifically for flash floods.

Flash Flood Guidance System

Recently launched to address the challenge of flash floods. Addresses the challenge of disaster mitigation, disaster management and rehabilitation in case of flash floods affected regions.

Significance of FFWs

- Helps raise awareness in population about flash floods.
- Reduces economic losses due to flash floods as it would provide prior warning.
- Also helps to track other weather phenomena like rainfall, cyclone, landslide

Hence the initiation of FFWs would help India reduce vulnerability to flash floods and help achieve the SDG and Sendai framework targets.

17. Hydrogen based energy production can play a key role in a clean, secure and affordable energy future. In this context, identify the potential and opportunities for utilising hydrogen based technologies. What are the challenges that need to be addressed to fulfill the potential?

(250 words) 15

हाइड्रोजन आधारित ऊर्जा उत्पादन एक स्वच्छ, सुरक्षित और वहनीय ऊर्जा के भविष्य में महत्वपूर्ण भूमिका निभा सकता है। इस संदर्भ में, हाइड्रोजन आधारित प्रौद्योगिकियों के उपयोग करने की संभावनाओं और अवसरों की पहचान कीजिए। इस क्षमता को साकार करने के लिए किन चुनौतियों का समाधान करने की आवश्यकता है?

Hydrogen is emerging as an alternative fuel to crude oil to power the future.

Hydrogen as clean, secure and affordable energy

→ The burning of hydrogen does not ~~not~~ release any green house gas emissions, only heat and water.

→ Also India has enough resources for hydrogen which is not the case with crude oil.

Potential for utilising hydrogen based technologies

→ In vehicles. for ex: In Delhi

Hydrogen - CNG buses are used as means of public transport.

→ Can be used in future cryogenic engines to power space sector.

→ Hydrogen has calorific value that is 3 times that of petrol or diesel.

→ It can be blended with new forms of renewable energy like biodiesel.

Opportunities for hydrogen based technologies

→ Can be used as alternative source of power in households.

→ Helps in achieving our Paris Agreement targets.

→ In ~~space~~ defence sector, aviation planes can be made to use hydrogen based fuel.

Challenge

- Unaffordable: Hydrogen costs Rs 315/kg.
- Making hydrogen fuel requires lots of energy and power, thus increasing emissions.
- Would need modification in car engines, thus making them unaffordable.
- Highly combustible.
- Storage has to be done at high pressure [700 times that of atmospheric pressure] and -253°C.

with the recent announcement of National Hydrogen Mission, India is on the path to harness the potential of hydrogen technology.

18. Despite the huge promise of satellite-based internet connectivity, it hasn't gained traction on a significant commercial scale, especially in India. Discuss. (250 words) 15

उपग्रह आधारित इंटरनेट कनेक्टिविटी में निहित विशाल संभावना के बावजूद, इसने विशेष रूप से भारत में, वाणिज्यिक पैमाने पर महत्वपूर्ण पकड़ स्थापित नहीं किया है। चर्चा कीजिए।

Satellite based internet connectivity refers to internet that is transferred through space based satellites to ground networks and then to our homes.

India has one of the largest population using internet which is only deemed to grow further.

Huge promise of satellite based internet

→ faster internet.

→ Stable internet connection.

→ Will help in universalisation of internet by providing internet connectivity to even remotest of

regions-

→ ~~Affs~~ → will help developing countries harness the potential of internet to deliver better governance through welfare schemes.

Reasons satellite based internet hasn't gained traction in India

→ India is a price sensitive market with lowest data charges in the world. Internet based on satellite would be unaffordable for most of its population.

→ The telecom sector is facing crisis with companies like Airtel, Vodafone in huge debt.

→ Lack of infrastructure to provide setup to connect to satellite based internet.

→ Conflict between agencies for use

of internet for civil vs defence
purposes.

Way forward

- forming committee of experts to frame policy on satellite based internet.
- Easing FDI rules to allow satellite based internet companies in India.
- Government support to telecom sector to help it come out of debt crisis.

Satellite based internet will help in
furthering digital inclusivity and faster
~~e-governance~~ e-governance.

19. India's attempts at strengthening its intelligence infrastructure and capabilities have historically been reactive and incremental, rather than holistic and sustainable. Discuss. Also, provide a concrete framework in transforming the country's intelligence capabilities.

(250 words) 15

अपनी आसूचना अवसंरचना और क्षमताओं को मजबूत करने के भारत के प्रयास समग्र और स्थायी होने के बजाय ऐतिहासिक रूप से प्रतिक्रियाशील और वृद्धिशील रहे हैं। चर्चा कीजिए। साथ ही, देश की आसूचना क्षमताओं के रूपांतरण हेतु एक ठोस ढांचा भी प्रदान कीजिए।

Due to various internal challenges like Emergency, Naxalism, etc and external challenges like terrorism, border aggression, Intelligence setup plays an important role in nation's security.

India's attempts : reactive and incremental

→ In 1999 Kargil war, India lacked GPS. It had to ask US for GPS which was denied. Only recently India has come up with its own navigation system, the IRNSS.

→ After the 26/11 Mumbai attacks, India raised the National Investigation

Agency for intelligence and investigation
relating to terrorism.

→ India only recently operationalised
NATGRID that synthesises intelligence
from all data bases.

→ Even though RAW was formed in the
wake of 1971 war, its area of
influence remains small.

Need for holistic and sustainable
intelligence capabilities

→ Due to rising internal and external
challenges.

→ Due to increasing instances of terrorism,
extremism.

→ Due to new forms of challenges like
cyber terrorism, cyber crime,

~~or~~ organised crime, etc.

→ To prevent another major attack like
Pulwama or 26/11.

Concrete framework in transforming country's
intelligence capabilities

- Better training of intelligence personnel.
- Use of high end technology at the border.
- Cooperation with other countries on
Information sharing.
- Adequate budgetary resources for
the intelligence agencies.

Strong intelligence networks build a strong
country capable of rising upto security
challenges of 21st century.

20. In light of the prominent instances of drone attacks by both state and non state actors, assess the challenges and capabilities of India in dealing with such security threats. (250 words) 15

राज्य और गैर-राज्य दोनों अभिकर्ताओं द्वारा ड्रोन हमलों के प्रमुख दृष्टांतों के परिप्रेक्ष्य में, ऐसे सुरक्षा खतरों से निपटने में भारत की चुनौतियों और क्षमताओं का आकलन कीजिए।

Drone attacks are emerging as new form of warfare in which flying drones are sent to enemy territory for offensive purposes.

State actors using drones

- The recent Armenia - Azerbaijan war in which the Turkish supplied drones were effective in the victory of Azerbaijan.
- US has used drones for attacks on terrorists like Taliban in Afghanistan and ISIS in Syria.
- Pakistan uses drone to drop bombs, ~~drugs~~ drugs and ammunition across

Indian borders.

Non state actors using drones

→ Terrorist organisations like Lashkar-e-Toiba and Jaish-e-Mohammad to supply materials to their members operating on Indian side.

→ Recent attack on Airforce station in Jammu.

Challenges of India in dealing with such security threats

→ These fly low and most of the times are undetectable by RADARs.

→ Since these are easily available on e-commerce websites like Amazon, people can buy it using fake IDs.

→ These are low cost high hitting tools and even if one drone is shot down, it can bring lot of

damage to enemy country.

India's capabilities in dealing with such challenges

- India is investing in developing its own drones.
- Su-30 missiles from Russia would be an effective counter to drones.
- Investments in border areas with laser fencing that can raise an alarm as soon as it sights a drone.

India needs to gear up for future security challenges like drone warfare to keep its citizens safe.