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GENERAL STUDIES COMMENT SHEET 1511

Name of Candidate	Aashna Chaudhary		
Medium Eng./Hindi	English	Registration Number	7 7 8 8 7 7
Center		Date	

INDEX TABLE			INSTRUCTIONS
Q. No.	Maximum Marks	Marks Obtained	1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code). उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)। 2. There are TWENTY questions printed in ENGLISH & HINDI इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं। 3. All questions are compulsory. सभी प्रश्न अनिवार्य हैं। 4. The number of marks carried by a question/part is indicated against it. प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं। 5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one. प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे। 6. Word limit in questions, if specified, should be adhered to. प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए। 7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off. उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।
Total Marks Obtained:			
Remarks:			

16-B, 2nd Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar
Delhi- 110009

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?

Ans: India has a vast coastline of 7,516 km with around 5,000 km peninsular mainland coastline and around 2,000 km islands coastline.

Reasons for modal conservation to Roads and Railways

- 1) Flexibility associated with roads whereby trucks could be stopped and rest taken at will.
- 2) Various regulations and clearances delayed due to red tapism.
- 3) slow mode of transport and time taking.
- 4) Infrastructural irregularities in the waterways.
- 5) Policy paralysis with Sagar Mala.

initiative taking a backseat
with completion delays.

Way Forward

- 1) Infrastructure creation with
a component in National
Infrastructure Pipeline.
- 2) Boost to private participation
through various incentives.
- 3) Single window clearances.

With waterways being the
cheapest mode of transport,
it needs a push by the
government.

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।

Ans: The failure of IL&FS and other NBFCs in ramping up infrastructure growth has led to the debate around a National Bank for Infrastructure financing.

Drivers of Growth

- 1) Dedicated credit dispersion for infrastructure creation.
- 2) Ease of Doing Business leading to a high private sector participation
- 3) Financing of the stalled project giving impetus to monetisation initiative by the government.

Challenges

- 1) Multiplicity of agencies leading to further ~~loss~~ close-up due to competition.
- 2) Decline in profits and high levels of NPA's traditionally associated with the sector.
- 3) Competition with National Infrastructure Pipeline with an allocation of ₹ 100 lakh crores.

Thus, a National Monetisation Pipeline and National Infrastructure Pipeline should be more focused with contemporary paucity of resources.

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Don't write anything this margin (कुछ भी इस में लिखें)

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।

Ans: The subsidies in India account for 2.3 % of India's GDP, with agricultural subsidies being the maximum (Economic Survey 2019 - 20).

Issues related to Fertiliser subsidies

1) Ammonia waste generation, with levels as high as 3 ppm recovered from ammonia water.

2) Concumbing of subsidies by large farmers.

3) Increased use of urea compromising soil fertility.

4) Corruption by fertiliser companies in availing subsidies.

Reforms Needed

- 1) Direct Benefit Transfer to discourage excess application of fertilizers.
- 2) A reduction in subsidies to urea-based fertilizers in favour of N, P, K fertilizers.
- 3) Capping on usage of fertilizers based on area of land.
- 4) A positive shift towards Zero Budget Natural Farming.

Soil Health Card Scheme is a good effort to rationalize fertilizer application in India.

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।

Ans A 1°C rise in temperature as compared to pre-industrial levels, has necessitated a debate on climate-resilient agriculture.

Need for Climate Resilient Agriculture in India

- 1) A decline in groundwater in Green Revolution areas. Eg Punjab.
- 2) India is exposed to climate vagaries with localised heavy rain bursts destroying crops.
- 3) Decline soil fertility due to excess exposure to fertilisers.

Adoption of Climate Resilient Agriculture

- 1) MSP reforms in favour of legumes for nitrogen fixation.
 - 2) A change in cropping pattern with nutri-cereals providing higher energy and suited to agro-climatic conditions in India.
 - 3) Direct Seeding of Paddy, Zero Budget Natural Farming can help in climate resilience.
- Climate resilient agriculture will help in ensuring nutritional security in the long run.

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 पार्कों (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।

Ans Mega Food Parks refer to the area-clusters promoting the food processing adopting a life-cycle approach.

Importance in Food Processing Sector

- 1) Value addition for primary products through primary and secondary processing centres.
- 2) Reduce wastage through collection centres and a link to cold chain.

3) Develop forward and backward linkages!

Reasons for Stunted Growth

- 1) Land requirements are very high.
- 2) Lack of credit due to apprehension of banks regarding the performance of sector in the past.
- 3) Low processing levels with only 3% of fruits and vegetables being processed in the country.

~~There is a need~~

There is a need for greater private sector participation, credit injection and policy support to Mega Food Parks.

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।

Ans. Biomedical waste has increased by 300% in 2020 on account of COVID 19 pandemic outbreak.

Challenges associated with Biomedical waste

- 1) Lack of segregation of waste at the domestic level.
- 2) Antimicrobial resistance due to exposure to biomedical waste.
- 3) Hazardous waste releasing toxins thereby leading to morbidity.
- 4) Health impacts to the waste collectors being exposed to such a waste.

Key Features of Bio-Medical Waste Management Rules, 2018

- 1) Differentiate between home-generated, hospital-generated and defence-generated wastes.
- 2) Provision for a disposal facility attached to hospitals.
- 3) An incineration process to be adopted.
- 4) Penal provisions due to non-adherence to the rules.

COVID 19 has necessitated the scientific disposal facilities more than ever.

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?

Ans: Impact based forecasting refers to the warning system based on scientific study of traditional experiences with the disaster on a case-to-case basis.

Role of Impact based Forecasting in Disaster Management

- 1) Prediction of the nature of disaster in the terrain.
- 2) Associated climatic, geographical and geological conditions with the disaster occurrence
- 3) Early warning related to the disaster
- 4) Structural breaks through a Building Code for resilience

to disaster.

5) Community guidelines and policy documents for dealing with the disaster.

Thus, impact based forecasting is essential to disaster preparedness, response and recovery.

- ✓ 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।

Ans. Low Earth Orbit has 3,000 non-functional and 1,000 functional satellites.

Crowding of LEO

- 1) A wave to launch remote-sensing satellites such as Cartosat series.
- 2) Anti-Satellite exercises such as Missile Shakti by India.
- 3) Collision of satellites in the space.
- 4) Space linked internet provisions such as Starlink by Space X.

Associated issues

- 1) Kessler Syndrome leading a chain reaction to a space debris.

- 2) the absence of international regulation to check overcrowding
- 3) Detonation of International Space Station Components by 0.24% every 4 years.

International Efforts Taken

- 1) Outer Space Treaty, 1967 for responsible use of space.
- 2) Remove Debris Programme by European Union.
- 3) Project NETRA by India
- 4) Ground based monitoring of debris.

While space has been used for a plethora of developmental activities it is needed that it should be kept clear of debris.

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- ✓ 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 is defined as the usage of bacteria, virus, fungi and other biological agents to cause death and disease in a geographical region. Eg. 2001 Anthrax spores in postcards in India.

Existing Measures to counter Bio-Terrorism in India

- 1) A deterrence in the form of defensive bio-terror facility.
- 2) Biological Diversity Act, 2002 to check the entry of invasive alien species.
- 3) A signature to Cartagena Protocol on Biosafety.

Need for a Bio. Terrorism Law

- 1) Confictual neighbours such as Pakistan and China.
 - 2) A rise in epidemics and pandemics such as SARS, Nipah Virus.
 - 3) A robust Research and Development framework.
 - 4) Difficulty in controlling such attacks and massive vulnerability due to large population.
- A dedicated and comprehensive law is required to check that such an attack is never faced by the country.

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।

Ans With a land border of over 15,000 kms, India is a vulnerable nation to border security breaches.

Prevailing security challenges

1) Border disputed, eg Gilgit-Baltistan, Akai Chin, Arunachal Pradesh, Sinchen, etc.

2) Smuggling of gold, cattle, drugs, etc. across the border.

3) Anti-national activities and terror influx from the border.

4) Water dispute such as Beesta Water Dispute along Indo-Bangladesh border.

New Initiatives taken

1) Integrated Law Enforcement Centres

- A uniform policy directive for the maintenance of border.
- Co-ordination across the various forces across various border.
- Reinforcement of India's seriousness regarding border security.

2) Smart walls

- Use of technology has opened future avenues for research in border security.
- Lack of human interface leading to minimal errors.

It is high time that border security be taken seriously with the adoption of technology and a multi-stakeholder approach.

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।

Ans Farm loan waivers have become a regular feature of Indian polity and economy.

Adequacy of farm loan waivers

Favour

1) Needed to curb the suicide rate, presently at 4.2% among Indian farmers.

2) Pay the debt with 52% agricultural households debt-ridden.

3) Alleviate the genuine distress of farmers due to crop failures.

Against

1) Does not break the debt cycle.

- 2) Covered by large farmers.
- 3) No guarantee for future crop failures due to vagaries of nature.

Loan Waivers and Sustained Growth

For

- 1) Breaking off the debt cycle, may provide a boost to small and marginal farmers.
- 2) Availability of funds to buy inputs and carry a sustained growth.
- 3) Morale boost leading to hard work.

Against

- 1) Moral Hazard with farmers

leading to NPA's

2) Overexploitation of land with
an increased government support

3) Immediate solution with
land-related problems intact
in the long run.

An investment in soil health,
climate resilience and organic
solutions are the way forward.

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।

Ans MSME sector has seen growth in the last decade unprecedented in the country at the turn of century.

Need for focus on this sector

1) Export potential with 40% of all industrial exports being attributed to MSME.

2) High employment opportunities with the sector employing 11% of the workforce.

3) Multiplicative effect with a 1.2% rise in GDP per 10% increase in MSMEs.

4) Reduction in poverty levels in

line with SDG 1

Measures taken by Government

1) Production linked Incentive
for attracting investments in the
sector.

2) MUDRA Banks for re-financing
credit to the sector.

3) Emergency Credit Line Guarantee
Scheme

4) Stand Up India Scheme for
empowering women and depressed sections
entrepreneurship.

Way Forward

1) Infrastructure creation with a
component in National Infrastructure
Pipeline.

2) Tax incentives in the long-
term.

3) Long-term credit at cheaper interest rates.

4) Ease of Doing Business via minimising red tapism and increasing enforcement of contracts.

MSMEs have great potential in taking economy to \$ 5 trn in the coming years. Thus, a renewed focus on MSME is the need of the hour.

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- 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।

Ans: Skilling is the need of the hour with India being in the phase of Demographic Dividend which is expected to last till 2035.

Challenges in Skilling Indian Population

i) Education

i) Only 40% of the Indian population is literate, with female literacy as high as 46% (Mo PA, 2019 Report)

ii) COVID 19 impact with a decline in Gross Enrollment Rate due to

digital divide.

iii) Low budgetary Allocation, i.e. only 2.3% of GDP

2) Employment

- i) As per PLFS 2019, unemployment levels are 45 years high in the country.
- ii) Disguised unemployment with 52% of Indian population engaged in agriculture sector.
- iii) Low social security as unorganised sector accounts for more than 90% in employment creation.

3) Employability

- i) In a PLFS Survey, it was revealed that only 9% of the employed are formally or informally trained in India.
- ii) Lack of vocational training in education curricula.
- iii) Outdated skill infrastructure.

with less focus on industry
relevant skills.

Way Forward

1) Vocational skills and apprenticeship to be included in the school curriculum.

2) Creation of 10 million jobs per year to infuse the labour force.

3) Relevant skills through industry-academia linkage.

Skilling, Reskilling and Upskilling are required to prevent India's demographic dividend from becoming demographic disaster.

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।

Ans Agriculture marketing refers to the mechanisms involved in the selling of agricultural produce.

Importance of Agricultural Marketing

- 1) Stable income for farmers through the provision of MSP.
- 2) Competitional disadvantage to poor farmers reduced
- 3) A central mandi to ensure ready market for farmers with low infrastructure to hold prices higher.

Issues with Agriculture Marketing

- 1) Institutional
- 2) Exploitation of farmers by the middlemen, known as

Don't write anything in margin (अंतर मार्ग में कुछ ना लिखें)

'सूक्ष्म' (Micro)

ii) High Mandi fees being drawn from poor farmers.

iii) Inhibit competition and choice to farmers who are reduced to being price-takers.

2) Infrastructure related issues

i) High wastage to the tune of 13-15% due to lack of cold chain integration.

ii) Irregularities in the timing of Mandi

iii) No transportation support to poor farmers

Measures Taken

1) Model APMC Act to improve the functioning of mandis.

2) e-NAM for greater choice and procedural ease for farmers.
3) The three farm laws that have been repealed also addressed the issue with agriculture marketing.
With agriculture being a state subject it is needed that states are on-board central efforts to reform the sector.

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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।

Ans. Recently, fishes have been found to be polluted due to ingestion of Formaldehyde.

Challenges related to Marine Litter

i) Environmental

i) Loss of biodiversity due to high ingestion of plastic by marine organisms

ii) Decline in coral reefs that serve as habitate for marine organisms. Eg. Coral Reef Bleaching

iii) Sedimentation of water bodies leading to urban floods.

iv) Eutrophication and the loss of biodiversity.

- 2) Socio-economic challenge -
- i) A dip in fish exports from India due to marine litter.
- ii) Health issues such as Minamata disease from mercury pollution.

Initiatives taken by Global Community

1) MARPOL to reduce pollution by ships.

2) Minamata Convention 2016 to reduce mercury pollution.

3) Aichi Biodiversity Targets for the rights clean ecosystem of organisms.

Way Forward

1) A comprehensive international legislation covering marine

pollution.

2) Adherence to Paris Climate Agreement, 2015 to bring down global pollution.

3) Quick disposal of plastics in the water bodies

'Conservation of species' is the first step to 'Conservation of environment'.

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।

Ans: Flash floods refer to surprising local floods, due to natural and anthropogenic reasons.

India's Vulnerability

Around 12% of India's land area is vulnerable to flash floods. Eg. Karnataka floods in 2000.

Measures for resilience to flash floods

- i) Preparedness
 - i) Early warning systems such as C-Flows and I-Flows.
- ii) Community awareness generation regarding dealing with flash floods.

2) Mitigation

i) Structural

- Development of sponge cities in line with China.
- Rain Water Harvesting infrastructure to deal with dual whammy of floods and droughts.

ii) Non-structural

- Flash Flood Guidelines such as Flash Flood Guidance System (FFGS)
- Policy measures and a separate legislation to deal with flash floods.

3) Rescue

- Immediate deployment of National Disaster Response Force

4) Recovery

- Provision of medicines through drone delivery.
- Long-term rehabilitation

with structural mitigation measures.

Flash Flood Guidance System

Launched by IMD, it is highly relevant in:

- 1) Data gathering and vulnerability assessment.
- 2) Impending disaster warning.
- 3) Community awareness and dedicated training to troops.
- 4) Evacuation and rehabilitation measures.

In line with "Disaster Risk Reduction", FFGS is an innovative solution.

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 बहनीय ऊर्जा के भविष्य में महत्वपूर्ण भूमिका निभा सकता है। इस संदर्भ में, हाइड्रोजन आधारित प्रौद्योगिकियों के उपयोग करने की संभावनाओं और अवसरों की पहचान की जाए। इस क्षमता को साकार करने के लिए, कितने चुनौतियों का समाधान करने की आवश्यकता है?

Ans. Hydrogen based Energy is an alternative to fossil fuel based energy, given an impetus in National Hydrogen Project Mission, 2021.

Potential and Opportunities

- 1) Renewable source of energy with water being the only by-product.
- 2) High availability of Hydrogen in the free atmosphere as well as in the form of water molecule.
- 3) In line with India's commitment of reducing Green House

Gas emissions by 33-35% by 2030 as compared to 2005 levels.

Challenges

1) A disruptive technology involving high costs.

2) Green Hydrogen is twice as costly as Grey Hydrogen.

3) Highly inflammable leading to risks in transportation and storage.

Way Forward

1) Incentives by the government for the production of Hydrogen based energy.

2) Boost research and development for making Green Hydrogen economical.

3) Use of next generation cylinders.

for reducing the danger associated
with inflammable conditions.

Renewable energy is the future
with fossil fuels being limited
in nature.

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

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।

Ans: Satellite based internet connectivity refers to the secure network in the outer space utilised for internet connectivity.

Huge Promise of Satellite Based Internet

- 1) Economic growth, with a 10% increase in internet connectivity driving the GDP by 2.5%.
- 2) Low latency with a large number of satellites being placed in low Earth Orbit.
- 3) High accessibility and remote area connectivity leading to better governance.

4) High quality service aimed at universal - based solutions.

Challenges

1) Requirement of a large number of satellites, and thus, high capital ~~cost~~ costs.

2) Minor obstructions may lead to a disruption in services.

3) In addition to the already high space junk with 3,000 dysfunctional satellites.

Way Forward

1) Government support to initiatives like Starlink, Project ~~son~~, Project Kuiper, etc.

2) Boosting private sector investments in India through ESG bonds.

3) Human Capital Creation through state-of-the-art technology and infrastructure

"Digital" is the new keyword conditional upon internet penetration. Space-based internet is a futuristic solution in this regard.

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।

Ans Intelligence infrastructure is robust in India comprising Intelligence Bureau (IB), RAW, Narcotics Control Bureau, etc.

Historical assessment of India's Intelligence Capabilities

i) Reactive and incremental

i) Creation of Research & Analysis Wing (RAW) in the aftermath of Indo-China Conflict (1962), and Indo-Pakistan War (1965)

ii) NATPRID and National

Investigation Agency (NIA) formed in the aftermath of Mumbai Terror Attacks

2008

- 2) Not Holistic and Sustainable
 - i) Use of colonial era intelligence techniques by IB ^{after} ~~even after~~ two decades of independence.
 - ii) Earlier activities of RAW were limited to the actions of Pakistan and China.
 - iii) Limitations of CBI via "general consent" clause.

Transforming country's intelligence capabilities

- 1) A white paper on procedural and operational gaps in the intelligence infrastructure.
- 2) A comprehensive legislation demarcating the operational spheres of different agencies.

3) Co-ordination between Centre
and State for national unity
and integrity.

Intelligence gathering is the
first step in ensuring internal
security and needs to be revamped.

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।

Ans There have been high instances of drone usage along Indo-Pakistan and Indo-China borders.

Prominent instances

- 1) Recovery of spy drones from Jammu and Kashmir in 2021.
- 2) Influx of nano drones at Line of Actual Control (LoAC), recovered by IPBP time and again.
- 3) Dropping of Ak 47/56 in Purnia, West Bengal.

Challenges in dealing with such threats

- 1) Low technological capability

for dealing with advanced technology attacks.

2) Difficulties in establishing the origin of the attacks.

3) Data breach via nano drones and spy drones.

Capabilities of India

1) Advanced radar detectors such as Falcon AWACS from Israel.

2) High capability advanced drone technology, such as Ruston.

3) National Technical Research Organisation (NTRO) and Defence Research and Development Organisation (DRDO) working towards perfecting the technology

Technology oriented problems
require technology oriented
solutions. Thus, India should
ramp up its technological infrastructure
in dealing with modern
internal security challenges.