

# VISION IAS

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## GENERAL STUDIES (TEST CODE : 1511)

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Medium Eng./Hindi	ENGLISH	Registration Number	269847
Center	LUCKNOW	Date	09/11/21

### INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7	10	
8	10	
9	10	
10	10	
11	15	
12	15	
13	15	
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.

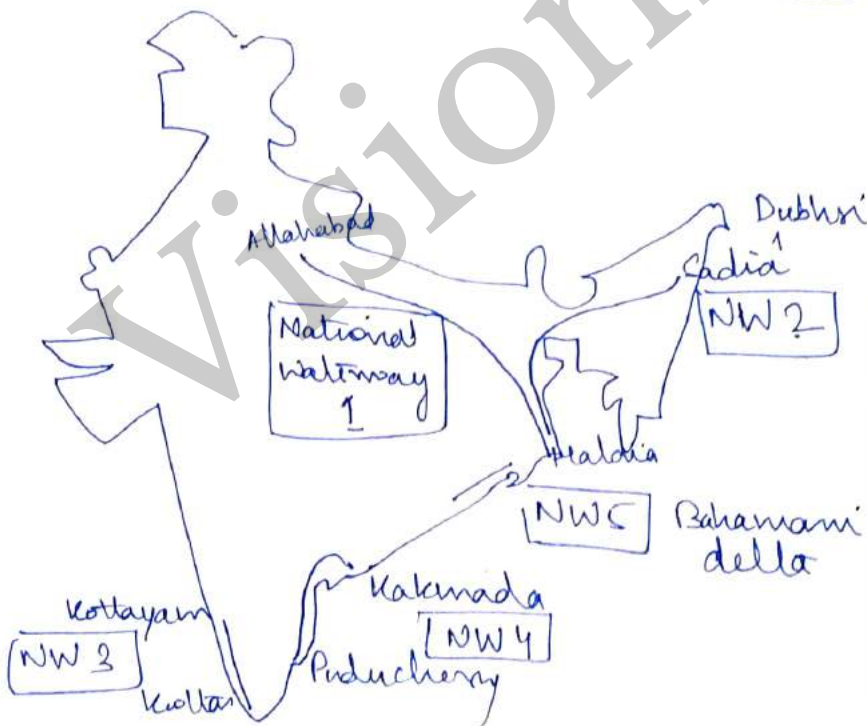
6.

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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**

विरुद्ध तट रेखा और अनेक जलमार्गों के बावजूद, भारत रेल और सड़क परिवहन प्रणाली में जलमार्गों की दिशा में महत्वपूर्ण प्रणालीगत परिवर्तन (मॉडल शिफ्ट) करने हेतु अपनी क्षमता को मार्थक करने में क्यों अगमर्थ रहा है?

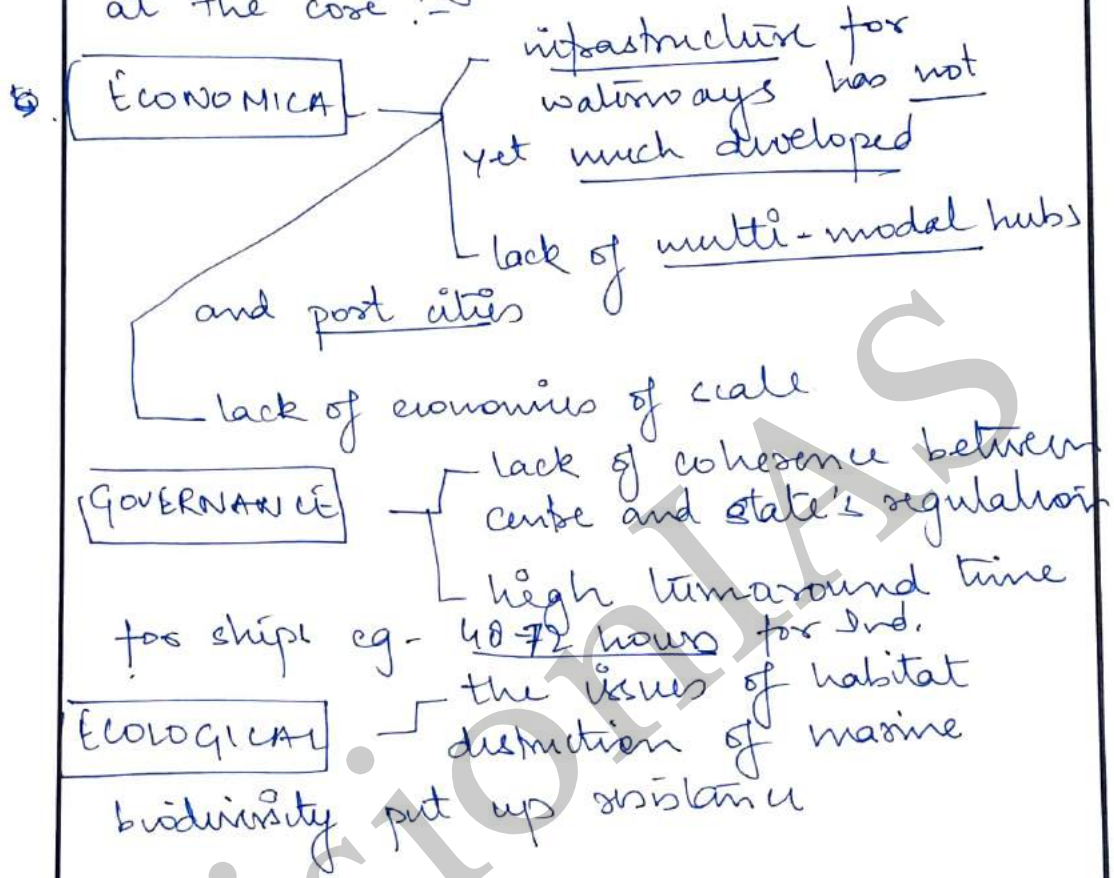
India has a vast coastline of 7,500 km but its internal waterway traffic constitutes of less than 10% of total freight & passenger movement



for India's major waterways

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The following reasons have been at the core :-



The waterway mode of transport is most cost efficient and thus projects like Sagarmala are a good foundation stone in this aspect.

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 व्यक्त करने के लिए एक राष्ट्रीय अवसंरचना वित्तपोषण और विकास बैंक की स्थापना के कदम की अपनी स्वाभाविक कमीनिया होगी। चर्चा कीजिए।

National Bank for Financing Infrastructure and development has been conceived with the mandate to provide long term loans to the infrastructure sectors.

~~Though the idea was~~

The Indian infrastructure sector has been struggling with an asset liability mismatch wherein it has short term borrowing & long term lending leading to liquidity crunch.

NBFID has been aimed to solve this problem however, it will have its own challenges to overcome.

The NBFID does not source funds

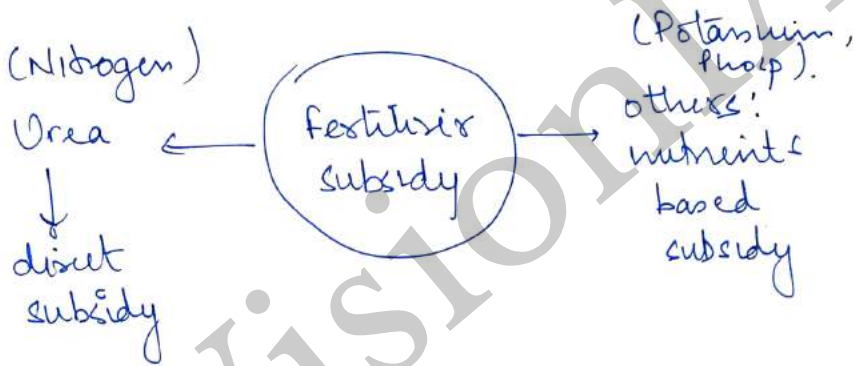
from people, rather it sources funds from market, government, etc. While the market already in poor sentiment might not raise enough money for infrastructural projects.

Infrastructural projects have a very long gestation period.

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।

India is the largest consumer of fertiliser in world where the much of it is heavily subsidised by government.



Issues related to fertiliser subsidy:-

- ↳ Heavy burden on exchequer
- ↳ leakage of subsidy
- ↳ Urea inclined → skewed N:P:K ratios (6:4:4:2)
- ↳ illegal smuggling and diversion of subsidised fertiliser into industries

Need for reform in this :-

The subsidy is heavily inclined towards urea and it must be taken to be made sure that proper application of fertiliser is done essentially. This can be done with the implementation of nutrient based subsidy in urea.

The issue of leakage shall be taken cognisance of through the use of POS machines.

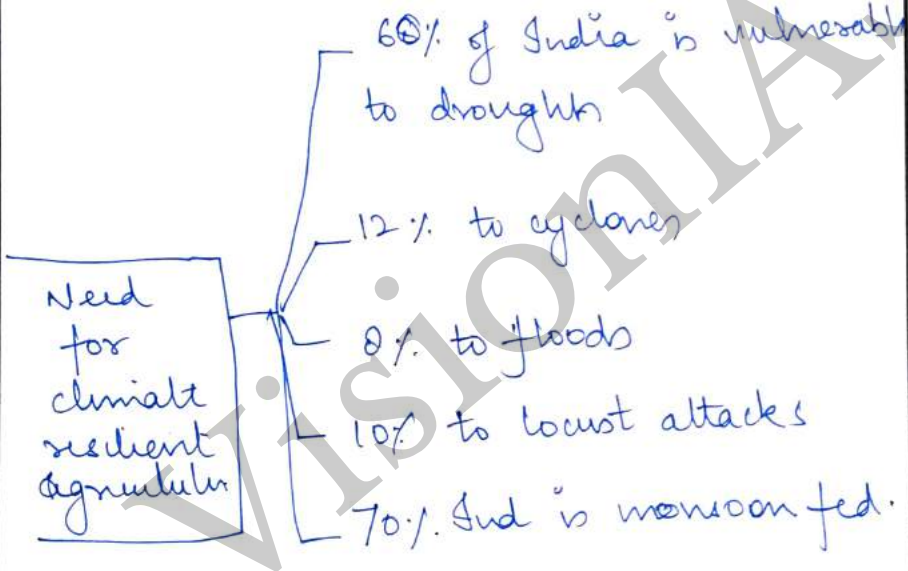
The subsidy has been one of the main ~~or~~ non capital source expenditure.

The fertiliser subsidy shall be rationalised and the use of technology like linking of Aadhar along with quantified quota allotment can prove useful in long run.

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 करने हुए, चर्चा कीजिए कि इसे कैसे प्राप्त किया जा सकता है।

According to the Climate Risk Vulnerability Index 2020 by German watch, Ind is among the top 10 most vulnerable countries due to climate change.



All the above disasters are set to rise in the wake of climate change. Thus climate resilient agriculture is needed.

HOW TO ACHIEVE CLIMATE RESILIENT AGRICULTURE

1. GREEN AGRICULTURE - The use of

organic methods and low CO<sub>2</sub> emissions from agriculture

2. MICRO IRRIGATION - Rainfall variability is prime cause of the vulnerability. It can be addressed with use of technologies like drip irrigation, sprinklers, etc.
3. REVIVING TRADITIONAL AGRICULTURAL TECHNIQUES - like that of those included in FAO's Agricultural Heritage List → Kuttanad Rice farming along with fish rearing
4. DIVERSIFICATION OF AGRICULTURE - by introducing & promoting animal rearing, beekeeping, silviculture, etc to reduce risks due to climate change.

Climate change is a reality and 6<sup>th</sup> IPCC Reports highlights its inevitability, thus preparing beforehand for food security becomes crucial to safeguard our SDGs by 2030.

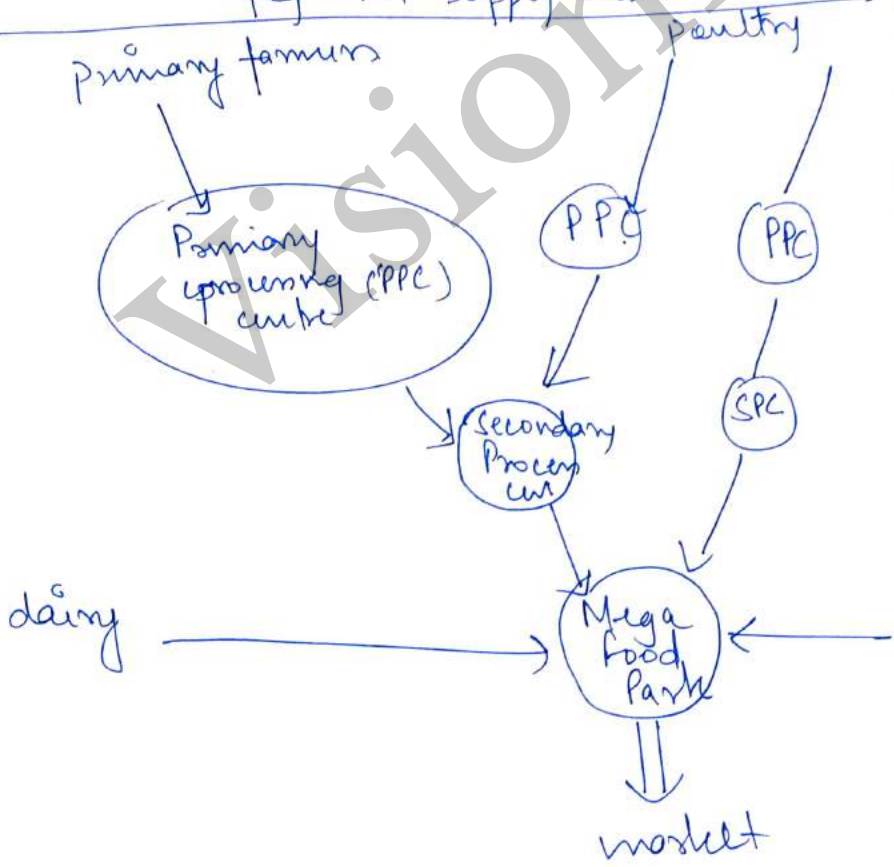
5. Mega Food Parks (MFPs) were considered to be a gamechanger for the food processing sector in India, but their progress remains stunted. Discuss.

(150 words) 10

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

Mega Food Parks were envisioned as the node at which all the food processing supply chains converged and they paved way to packaged food into the market.

fig FPI supply chain



### Reasons for their stunting

- ↳ Lack of investments
- ↳ Lack of agricultural produce.
- ↳ The farmer producer organisations which were to play a crucial role are not taking off.
- ↳ Structural bottlenecks in the supply chain.

The schemes like KISAN SAMPAADA and TOP to Total have benefitted the API industry but their proper execution is still needed.

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 में जूड़ी चुनौतियों का विवरण दीजिए। साथ ही, जैव-चिकित्सा अपशिष्ट प्रबंधन (संशोधन) नियम, 2018 की प्रमुख विशेषताओं का भी उल्लेख कीजिए।

Bio medical wastes are the wastes associated with the hospitals, pharmacies, etc. which is managed under the Bio Medical Waste Management Rules 2018.

### challenges associated

1. Increased Risk of infection - without proper disposal they can cause enhanced risk to consumable items like tetanus, HIV, etc.
2. Mainly Plastic Pollution - the chlorinated gloves, masks, surgical wears end up in rivers and oceans.
3. Rise of future Pandemics -

4. Issue in Disposal of such wastes - these require deep burial or incineration which is not done in many cases.

Feature of Bio Medical Rules 2010

1. Phasing out of chlorinated bags
2. Reducing the categories of wastes from 10 to 4

With the 2 consequent waves of Covid 19, the bio medical wastes have exponentially risen and their management needs special focus to avoid any future contingencies.

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 forecasting in disaster management refers to the forecast made after assessing the potential destruction that can be caused by any disaster.

Such forecasting can help strengthen disaster management as -

→ It can help identify priority areas  
 people  
 infrastructure

↳ in wake of climate change occurrence of COMPOUND EVENTS (where 2 disasters occur simultaneously) has increased. It can

help identify most viable prudent option.

- ↳ It can help in quick & efficient rescue
- ↳ It can help in coming up with guidelines for disaster & prepare accordingly.

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 संकेन्द्रण बढ़ता ही जा रहा है। इससे संबंधित मुद्दों को रेखांकित करते हुए, इस संबंध में किए गए अंतर्राष्ट्रीय प्रयासों पर चर्चा कीजिए।

any orbit

Low Earth orbit is below 1000 km from the surface of earth. and is heavily crowded.

Geo  
stationary  
orbit

Medium  
Earth  
orbit

Low  
Earth  
orbit

36000 km  
1000 km

fig. different orbits from earth.

### ISSUES ASSOCIATED.

1. KESSLER'S SYNDROME - a <sup>small</sup> satellite part of satellite break down can cause a chain reaction destroying all satellites in orbit.

2. SPACE WARFARE - weaponisation of space : eg USA launched its space division
3. SURVEILLANCE - countries keep eye on each other's territories
4. SPACE JUNK - satellites that remain in orbit

### INTERNATIONAL EFFORTS

1. Several countries have come together to sign an OUTER SPACE TREATY which prohibits use of weapons of mass destruction in space.
2. Moon & other celestial bodies are included in Global Commons
3. UK has launched a satellite to clean the space junk.

The new age is of space age but it must be kept in mind that earth's outer space is not inexhaustible, therefore countries now must also focus on cleaning up the region.

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 the use of biological organisms to cause mass destruction, eg Anthrax virus attack of USA.



Existing measures -

↳ Disaster Management Act (2005) had been used to tackle the pandemic which had the same impact as bioterrorism

↳ Epidemic Act (1897) - colonial era act was also utilised for that purpose.

↳ IPC and CrPc are used to counter  
bioterrorism

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## Need for Bio terrorism law

1. To fix accountability of the guilty
2. Bio terrorism can be a disastrous weapon in the hands of non state actors like Hijabul Mujahudeen, JUD, etc.
3. Once unleashed, it is un retrievable  
∴ its management ~~can~~ and control becomes the only option.
4. India is a very populous country with high pop<sup>d</sup> density i.e. 324 per/km<sup>2</sup>  
∴ it is very vulnerable to such attacks

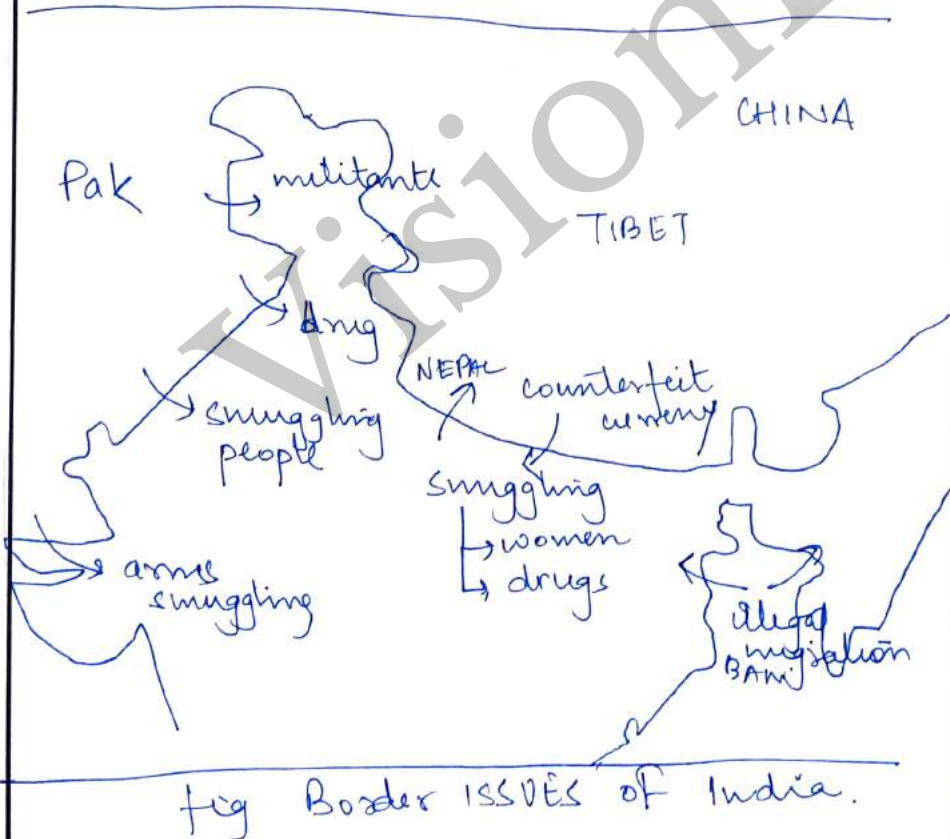
India is surrounded by dubious state and non state actors in present geopolitical context and thus it becomes very necessary to keep our guards up against any possible unforeseen disasters.

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।

Integrated law Enforcement Centres are pooled posts which have a mutual sharing of resources across various agencies for implementation of law.



Integrated Law Enforcement Centres can prove to be useful for various crimes that occur across the borders. The intelligence agencies like RAW, IB and paramilitary can help synergise the efforts, better vigilance and monitoring and trace the drug cartel.

Smart walls utilise the high end tech like IOT, artificial intelligence to secure the borders. They might prove beneficial in countering drone attack, Drones, tapping communication and scanning area for intruders.

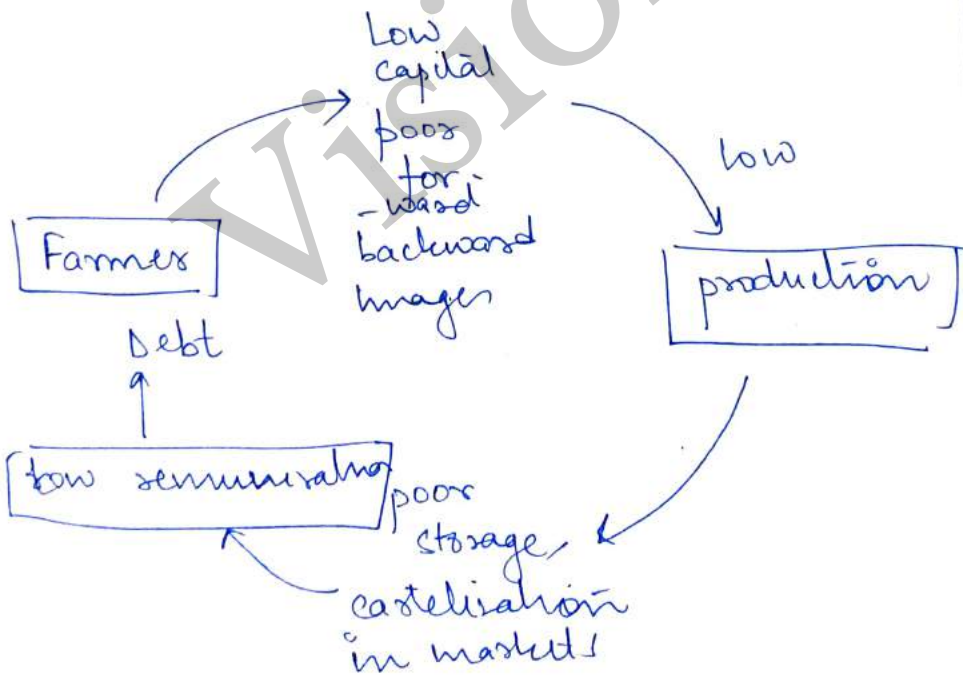
The use of technology is always a welcome step in safeguarding the borders however it must be ensured that such use of technology is sustainable and efficient.

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।

Indian agriculture has not seen a double digit growth in last many decades. There exists a problem of capital infusion which gets veiled in the short term solutions such as farm loan waivers.

Debt cycle of farmer.



Farm loan waivers are a myopic solution of a problem that runs deep on many levels.

### 1. AT PRE PRODUCTION LEVEL

- ↳ low mechanization
- ↳ poor quality seeds
- ↳ lack of irrigation facilities
- ↳ skewed application of fertilizers
- ↳ lack of crop insurance

The real issues which make the Indian agriculture unprofitable are rarely addressed by farm loan waivers.

These forward-backward linkage need to be made strong to turn the agriculture into a profit making enterprise.

### 2. AT POST PRODUCTION LEVEL

- ↳ storage : lack of warehouses & cold storages

↳ poor connectivity of farms with market

↳ non realisation of crop prices in the market due to cartelisation

These issues are the root cause of Indian agricultural plight and these require a structural reform. E-Nam, Private Entrepreneurs Guarantee scheme for cold storage, PM Kisan Bima Yojna, etc are the real solutions that have the potential to work in long term.

To double the farmers income by 2022, Indian needs to move on from the patchwork of farm loan waiver to monetisation of Indian agriculture.

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।

MSME sector contributes to 40% of India's export. It is the backbone of India's manufacturing economy.

80% of the manufacturing economy works in MSME

EMPLOYEMENT : most labour intensive sector

Need of MSME

NATURE : Most of MSME sector works as unorganised sector

GDP : MSME sector contributes to about 35% of India's GDP.

MSME sector make up for the highly diversified, low skilled, labour intensive, low tech enabled sector which has the potential to propel India's growth to double digit.

It has been focused to fill in the gap of manufacturing sector in India's economy.

### MEASURES TAKEN BY GOVT.

1. Definition of MSME has been swised to grant status of MSME to more enterprises
2. They've been given relaxations in GST.
3. Emergency Credit Line Guarantee scheme was launched to support the MSMEs during covid turmoil
4. Several schemes like Odhyam

5. have focused MSMEs  
~~Mandatory procurement of about 20% by central agencies and PSUs from MSME~~

what can further be done

1. There can be more incentive for them to register with EPFO and transition to organised sector
2. ~~A new ministry particularly focused.~~
3. Infusion of technology into MSME can help in increasing its efficiency

The empowerment of MSMEs is needed if India is to reach a \$5 trillion economy by 2024.

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।

India is undergoing a demographic dividend which can be harvested only when its population is skilled

EDUCATION: The ASER 2020 report by NGO Pratham highlights that Indian students have a poor learning indicator eg- class I students not being able to solve class III maths problem

↳ There is a gender disparity between girls - boys where more girls are enrolled in government schools & more boys in private schools

↳ India faces a high dropout rate

↳ In the wake of covid 19 it was seen that a DIGITAL DIVIDE also,

existed where about 70% students in West Bengal didn't have means to attend online class.

## 2. EMPLOYEMENT -

- ↳ Indian industry faces a mismatch of the courses / skills offered in universities and required in industries
- ↳ India has been witnessing a JOBLESS GROWTH
- ↳ Most of high quality jobs are in services sector which is now showing the signs of saturation
- ↳ Automation and AI has reduced jobs in manufacturing sector

3. EMPLOYABILITY: The industries are now transitioning into the 4<sup>th</sup> industrial revolution which requires skills that our education system

don't offer.

## INTERVENTIONS REQUIRED.

EDUCATION  
EMPLOYMENT

- credit based courses
- flexibility in choosing and changing careers
- reducing drop moving towards zero dropout from 100% GER.

EMPLOYMENT

- boost to MSME
- self employment & entrepreneurship
- establishing vocational training institutes

EMPLOYABILITY

- Reskilling & Upskilling
- bridge courses
- institution for enhancing skills like Skill Development Institute of Karpur, Ahmedabad.

New Education Policy 2020. is in line with the solutions that are needed to revamp our educational infrastructure.

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।

India is an agricultural based economy and thus the scope of agricultural marketing becomes very crucial.

### INSTITUTIONAL ISSUES

1. APMC choking - According to APMC Act all the agricultural produce has to pass through the APMC mandi thus forcing farmers to submit his will to sell in open market
2. CARTELIZATION : middlemen in mandis form ~~cartelization~~ cartels and dictate the prices leading to non realisation of prices.

3. LACK OF CROP INSURANCE - the crops of farmers are not insured in most of the cases leading to total destruction in case of climatic vagaries

4. RESTRICTION ON STOCKPILING = as Essential Commodities act doesn't differentiate b/w black marketing & stockpiling for food security & EXPORT

INFRASTRUCTURAL ISSUES.

1. STORAGE: Lack of warehouses and coldstorage put the farmers at the whims of APMC middlemen and force them to do distress selling.

2. CONNECTIVITY: poor conditions or even unavailability of roads costs the farmers precious time after harvest.  
Eg- in case of sugarcane it leads to drying up of the cane syrup and thus low price

3. LOW DENSITY OF MANDIS: density of mandis vary from every 5 km in Punjab to every 20 km in Assam.

Measure taken -

- ↳ New Farm laws have been introduced
- ↳ e-NAM for countrywide price realisation
- ↳ Warehouse receipts now utilised as a security
- ↳ PM Gram Sadak Yojna for connectivity
- ↳ Private Entrepreneurship Guarantee scheme for warehouse & cold storage.

Streamlining agricultural marketing and ensuring a smooth supply chain could prove to be a pivot around which India can become a crucial agri export hub in the world.

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।

The oceans have been the traditional dumpyard for plastic pollution which has now come to bite us back.

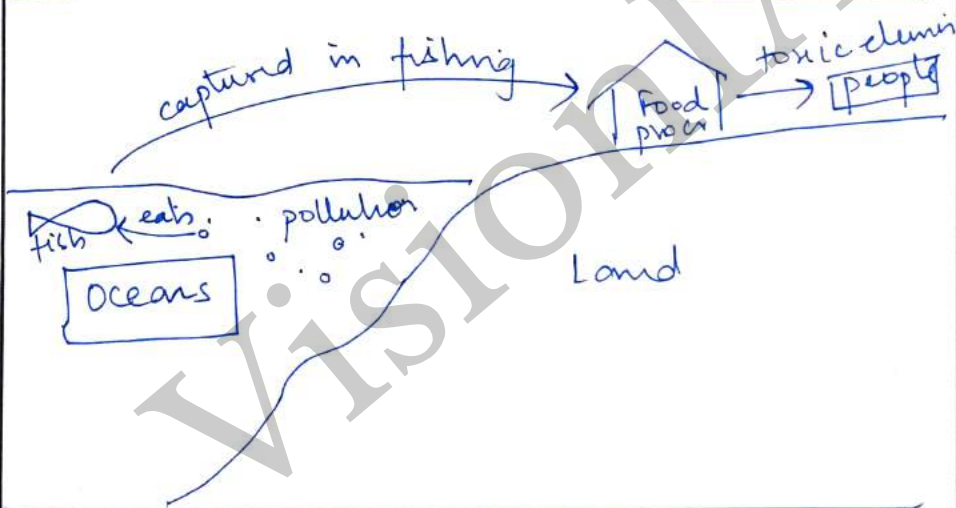
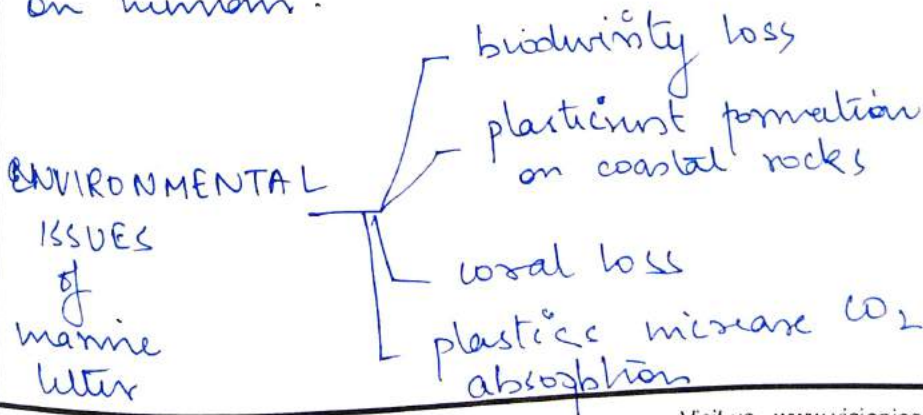


fig. ocean pollution & its impact on humans.

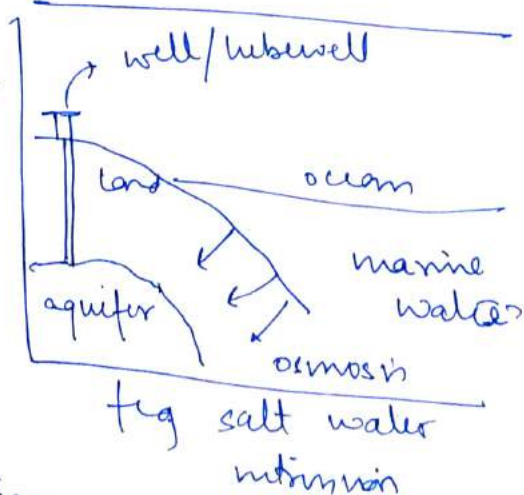


SOCIO ECONOMIC CHALLENGES

1. FARMER community is impacted as fishes, crabs and other marine organisms count dip
2. TOURISM takes a hit as the aesthetic of a place is destroyed. Eg - in 2018 the tourists inflow of Marina beach suffered due to pollution
3. Bioaccumulation and bioamplification causes cancer and other malignant ailments.
4. The polluted water also ingresses in the coastal groundwater

5. Too much litter or oil spills even disrupt the plying of marine vessel.

Eg - oil spill in Mauritius in 2020



INITIATIVES TAKEN

1. Clean Seas Campaign
2. FEE Blue Flag Beach Certification
3. MARPOL (Marine Pollution) convention
4. LONDON Convention .

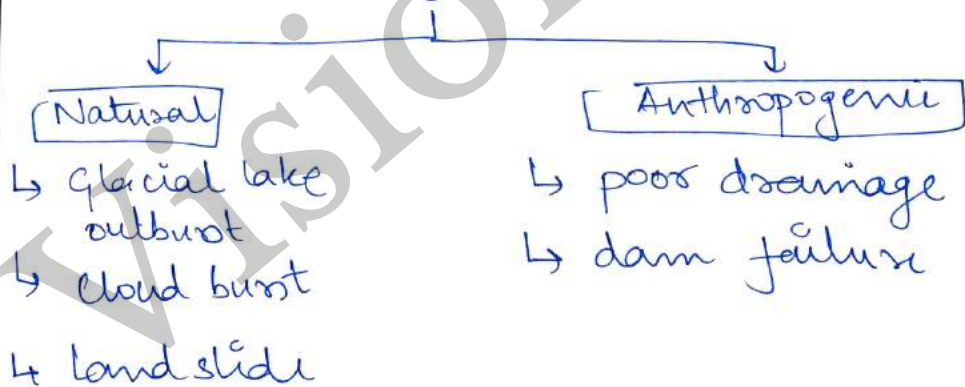
India has some mentionable policies for coastal zone management but it needs to come up with a new set of guidelines to holistically address the problem of marine litter. It will be crucial to realise the goal of SDG 14 i.e. life below water.

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।

12% of India is vulnerable to floods but in recent times, the phenomenon of flash floods have become very common.

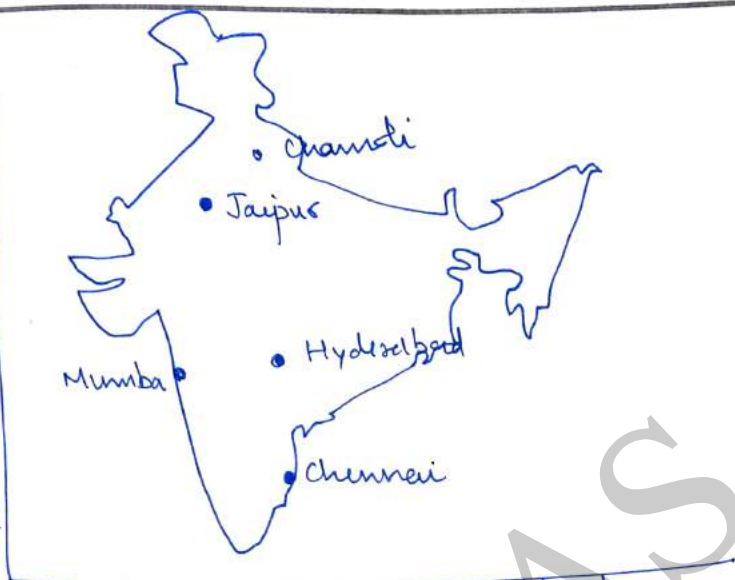
causes of flash flood



India's vulnerability

- ↳ Since flash flood can be both natural and anthropogenic, almost all of the India can experience

4. flash  
floods  
climate  
change,  
Poor urban  
drainage,  
changing  
rainfall  
patterns, etc  
have  
put Ind  
on a high risk category



feg. Recent cites of flash  
floods

## MEASURES -

1. MITIGATION & PREPAREDNESS - Hazard vulnerability  
mapping
  - Declogging the municipal drains and local streams
  - Generating natural aquifers like parks, ponds, etc.
  - Early Warning System
2. RESCUE & RELIEF - toll free helpline  
number.
  - prompt evacuation from worst affected areas.

REHABILITATION - quick and effective

The Flash Flood Guidance System has been a key gamechanger in dealing with flash floods. It operates at all three levels of pre-disaster, disaster and post disaster management and provides a toolbox for dealing with flash floods.

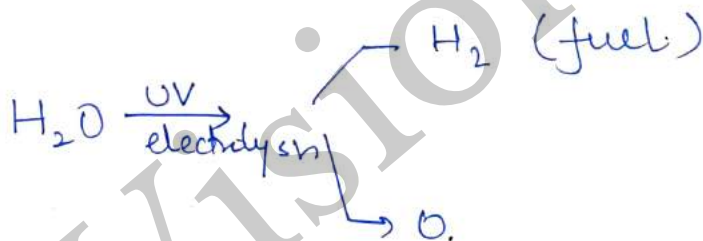
The 6th IPCC Assessment Report says that the extreme weather event associated with flash floods are bound to increase multiplefold and thus IMD's FFGE can be a key instrument in dealing with flash floods.

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?

PM Modi in his Independence Day Speech mentioned the launching of Green Hydrogen Mission for ensuring renewable energy security of India.



### POTENTIAL FOR HYDROGEN BASED TECH. & OPPORTUNITIES

India's total energy demand is around 375 GW of which 40% is met through non renewable energy.  
Hydrogen based technology can prove

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to be useful in increasing this share.

↳ India produces hydrogen which can be used in the rocket fuel for India's space program.

↳ Hydrogen based technology has huge prospects in Hydrogen / Hybrid / Flex Fuel vehicles.

↳ Hydrogen can be used in fuel cell which give a constant source of non polluting energy.

↳ Hydrogen Fusion can replace Nuclear Fission reactors  
challenges associated.

1. TECHNOLOGY - technology to extract hydrogen efficiently is still its nascent stage

2. STORAGE - hydrogen being an inflammable liquid is difficult.

to close -

3. ~~RESEARCH~~ ADOPTION & RESISTANCE: The currently running energy systems would be resistant to transfer from oil based source to Hydrogen.

4. Hydrogen is produced from electrolysis which in turn requires some input energy.

Hydrogen based technology holds the key to future's clean and sustainable energy provided the investments in research & development are made timely.

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 refers to the system of uplink and downlink transmission of signals using two radars and a satellite

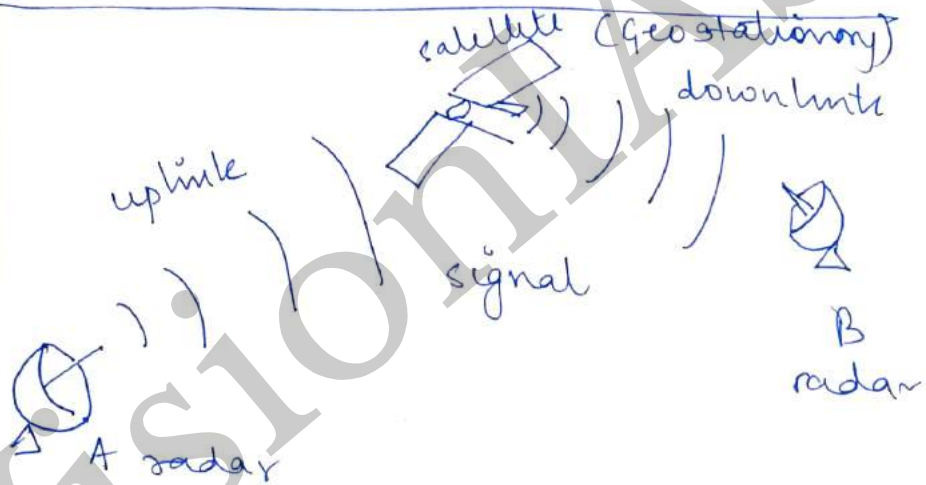


fig. satellite communication

The satellite based internet was a revolution over the wire based broadband and had made the internet accessible to everyone.

It has made the use of internet widespread and decentralised but even though its unique features it has not gained much traction.

There have been certain issues associated with it:-

- 1) Varying speed - the broadband provided a better reliable speed than satellite based internet.
- 2) Unreliable connection - the atmospheric conditions like clouds and even extra terrestrial conditions like solar flare and ion storms impacted the connectivity
- 3) Easily disturbed - the radar has to be in line of communication with the satellite which could get easily disturbed
- 4) Not Easy to use - unlike the

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easily operatable broadband, satellite internet needed technical intervention.

Presently newer technologies like SPACE BASED INTERNET which utilise the low Earth orbit satellites are making their way through. They can bring a new revolution in internet connectivity.

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 ममग्र 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।

R & AW was formed in the decade of 1960-70 after the 1965 Indo Pak war as a reactive step to strike at vulnerabilities of India's adversaries.

It has been a well accepted fact that India's intelligence infrastructure has been post event damage control oriented. For eg - Kargil war 1999 was an intelligence failure after which Kargil review committee suggested changes in military intelligence

↳ Mumbai attacks of 26/11 resulted in formation of National Investigation Agency - India's premier anti terror organisation

- ↳ The Poshāment attacks of 2002 on Pak border prompted operation
- ↳ Recent Drone attacks in Pathankot airbase have prompted surveillance through drones.

But having said so, it must be noticed that an intelligence success never comes into light. India's intelligence in J&K has been successful in eliminating commanders of various military outfits.

- ↳ In insurgency in LWE regions of Bastar, Dantewada and associated regions have reduced.
- ↳ India successfully executed operated Op. Conrise in Myanmar and Op. Bandar in Pakistan.

FRAMEWORK FOR INTELLIGENCE CAPABILITY

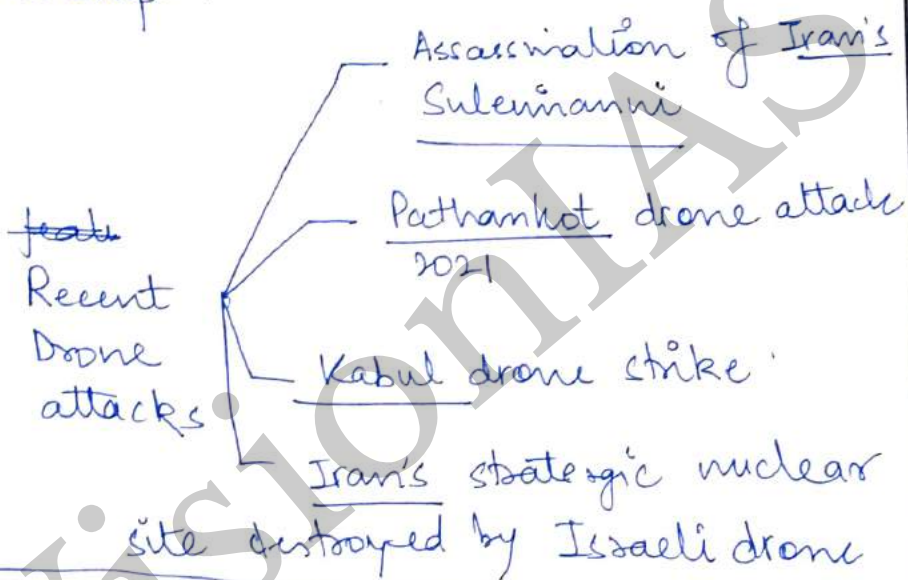
1. Strengthen the central agencies like RAW, IB and NIA by creating a separate ministry / department
2. Learn from the best intelligence agencies like CIA, FBI
3. Improve the grassroot tip a resource and assets
4. Monitoring of the officials in a centralised manner.
5. Involvement of new technologies
6. Training and skilling

The intelligence of a upcoming threat can save millions of lives from being destroyed and thus it becomes a prime national concern.

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 दुष्टानों के परिदृश्य में, ऐसे सुरक्षा खतरों में निपटने में भारत की चुनौतियों और क्षमताओं का आकलन कीजिए।

Recently Iraqi Prime Minister was the target of a lethal drone attack based assassination attempt.



CHANGES -

1. ANONIMITY & DECENTRALIZED NATURE - a drone can be flown by anyone and they donot always operate within line of sight.

2. POOR DEFENCE TECHNOLOGY - as seen  
in drone incursions along BSF posts  
on Pak border, India's anti  
drone tech is still in nascent stage

3. VULNERABILITY OF ALL STRATEGIC  
LOCATIONS - eg attack on Pathankot  
airbase

4. INTELLIGENCE GATHERING - by adversary  
nations

5. LACK OF A COMPREHENSIVE DRONE  
FOR MILITARY USE POLICY - although  
India has a civilian drone  
guidelines 2018 & 2010 it doesn't  
have a policy on weaponised drone

### CAPABILITIES

1. Indian Army and Air Force employ  
drones  $\left\{ \begin{array}{l} \text{UAVs} \\ \text{attack drones} \end{array} \right.$  eg. Heron,  
Rustom, etc.

2. Ind's research and development can develop a great drone tech.
3. Ind has employed ANTI DRONE tech such as both Hard kill (shooting) and SOFT KILL (jamming)
4. Use of 5400 missile system to target any aerial or sub-aerial ~~target~~. UAV or aircraft.

The world is entering in a new age of mechanised warfare. research on drone technology along with other space based asset can be prove fruitful for India's security concerns