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GENERAL STUDIES (TEST CODE : 1511)

Name of Candidate	ANKITA PUWAR		
Medium Eng./Hindi	ENGLISH	Registration Number	51795
Center		Date	27/12/21

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.

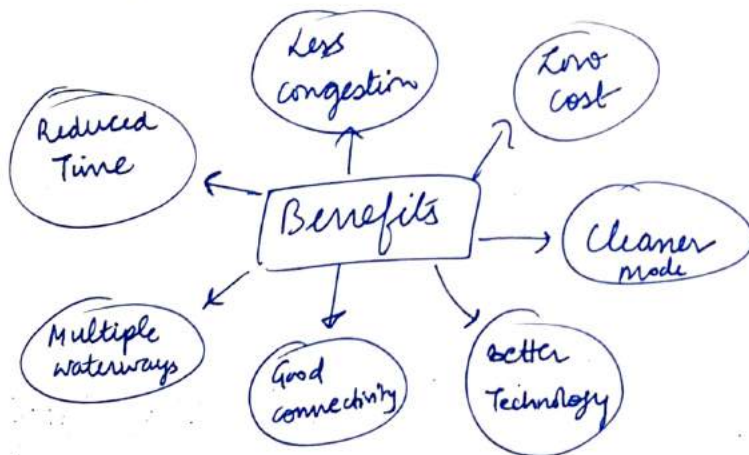
6.

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?

In India, the cost of logistics is as high as 14%. (China, USA - 8%).
due to less use of waterways.

India has a 7516 km long coastline and multiple waterways (6 are under development and 21 are declared).



However, India has not been able to use this POTENTIAL of WATERWAYS because —

1. Low investment in developing waterways.

2. No end to end CONNECTIVITY
eg. Roads provide last mile connectivity.
3. Neglected by various governments.
4. Inter state disputes on rivers.
5. Multiple dams on rivers, which affects its navigability. eg. Omkareshwar Dam
6. Congestion on major ports. eg. JNPT port
7. No deep sea port in India.
8. Depth of rivers is not adequate for navigation.
9. Opposition by fishermen as it affects fisheries.
10. Lack of proper cleaning of these waterways.

These waterways have huge potential of decreasing TIME and COST of transportation. By development of Multimodal Terminals and timely management of it, India can reduce its logistics costs.

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।

Infrastructure financing requires huge investment. and with government's push to GATI SHAKTI mission and National Infrastructure Pipeline, the need for NABFID (National Bank for financing Infrastructure Development) has increased MULTIFOLD

Benefits -

1. Increase private participation
2. Reduce cost of borrowing for infrastructure development.
3. Reduce fiscal pressure on government.
4. Collaborative and Cooperative development.
5. Attract foreign investments.
6. Generate Employment opportunities
7. Increase GDP.

However, it has following challenges -

1. To attract PRIVATE INVESTMENTS in infrastructural projects.
2. Streamline the projects
3. Collaboration between different banks and institutions.
- 4.

For the rise of Asian Elephants we need major infrastructural development and NABFID has important role in it.

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 spends almost ₹ 78,000 crore on FERTILISER SUBSIDY, which is 2nd highest after FOOD SUBSIDY (₹ 1.5 lakh crore)

ISSUES IN FERTILISER SUBSIDY

1. Excessive use of urea - as compared to other fertilisers due to its less cost.
2. Diversion of urea to other countries eg. Nepal where it is very costly.
3. Use of fertiliser without addressing soil needs.
N:P:K ideal ratio is 4:2:1 but in Punjab, N:P:K ratio is 33:8:1 due to excessive fertiliser use (urea)
4. Groundwater pollution and pollution of other water bodies due to surface run-off.
5. The nutrient based subsidy is not

effective due to excessive use of Urea (which mainly contains Nitrogen)

6. High cost of importing POTASH

[There is NEED FOR REFORMS]

1. To ensure sustainable agriculture.

2. Reduce fiscal burden on government.

3. Improve soil health.

Eg. ~~Neem~~ Neem Coated urea causes slow release of fertiliser.

4. Prevent diversion of urea to other industries.

5. Maintain Balance of Nutrients
N:P:K to 4:2:1

6. Reduce ~~costs~~ input cost for farmers by promoting Natural fertilisers - vermicompost, Manure etc.

7. Improve health of waterbodies & groundwater.
There is need for Rationalisation of

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।

In India, according to FAO, the crop productivity will decline by 30% due to climate change and extreme weather events.

NEED FOR CLIMATE RESILIENT AGRICULTURE

1. To ensure Food security
2. Reduce food wastage and damage due to climate change events.
eg. Rise in locusts attacks.
3. Improve productivity, which is currently (1.4). [In China - 2.5].
4. To make drought-resistance, flood resistant crops.
5. Ensure NUTRITIONAL security
6. To prevent damage from extreme weather events.

7. Deal with changing soil characteristics,
and pests etc.

TO ACHIEVE IT —

1. Invest in Research and Development e.g. IARI
2. Biofortification and Cross Breeding.
3. Genetically Modified crops, to have
certain climate resilient capabilities.
4. Increase investment and funding.
5. Greater awareness among farmers.
6. Learn from international experience
e.g. Philippines Rice.

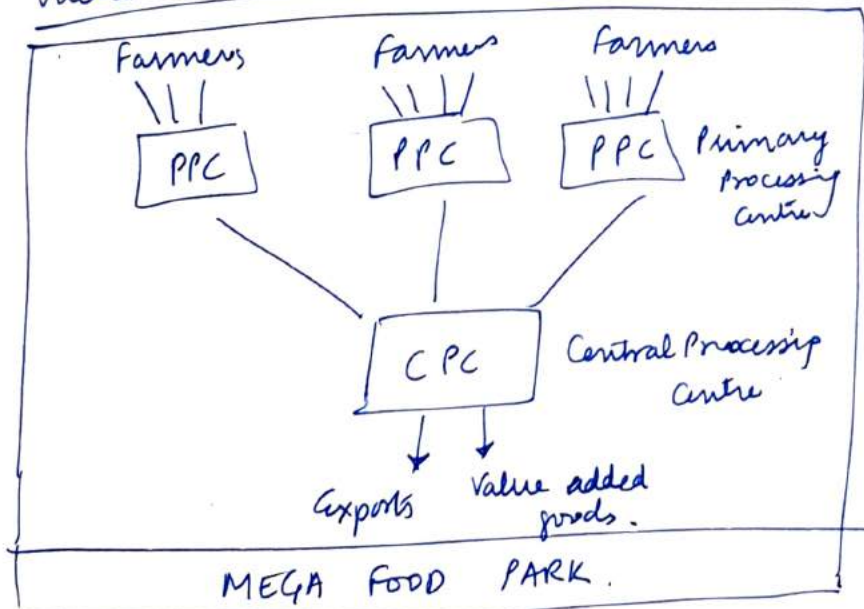
With changing global climate, there
is need to evolve technologies for
CLIMATE RESILIENT INFRASTRUCTURE.

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।

Mega Food Parks are the food processing centres that combine 7 elements like cold storage, processing etc. to ensure value addition and increased incomes



Gamechanger because -

1. Reduce wastage of perishable goods
2. Increased shelf life
3. Greater incomes for farmers
4. Increased exports
5. Nutrient enrichment
6. Value Addition

7. Employment generation
8. Forward and backward link with Agriculture.

HOWEVER PROGRESS IS STUNTED

1. Only 3 Mega food parks ^(MFP) are set up in Kerala, 2 in Madhya Pradesh and 1 in Uttar Pradesh, Tamil Nadu
2. Lack of investment by private players.
3. Farmers sell their goods mostly in APMC. Thus, MFP are not able to establish backward linkages.
4. High competition with foreign goods.

There is need to realise the impediments in growth of MFP and increase investments to achieve desired objectives.

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।

With the COVID-19 pandemic,
the Biomedical waste is increasing
by day.

Masks, PPE kits, and single-use
medical waste has increase the
BIOHAZARD of Biomedical waste.

CHALLENGES

1. Disposal of Biomedical waste
including harmful pathogen etc.
2. Collection and Transportation
since masks, gloves etc. are used
in every household.
3. Little awareness among people
about its harmful effects.

KEY FEATURES of Biomedical Waste Management Rules 2018

1. All Hospitals etc. - to properly classify the BIOMEDICAL WASTE in different categories example - wet, dry, hazardous & Biomedical waste.
2. ~~all~~ Biomedical waste to be incinerated or Scientific landfill.
3. Proper SIGNS and WARNING about biomedical waste.

There is need to sensitise public by IEC (Information, Education and Communication) campaigns to ensure biomedical waste is properly disposed off.

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

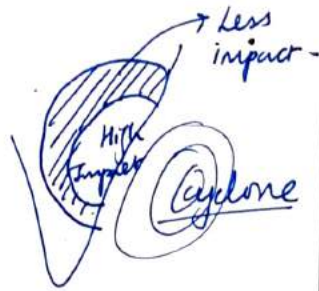
आपदा प्रबंधन में प्रभाव आधारित पूर्वानुमान से आप क्या समझते हैं? ऐसा पूर्वानुमान आपदा प्रबंधन की तैयारियों को कैसे मजबूत कर सकता है?

IMPACT BASED FORECASTING refers to the sending of forecast and WARNING based on Priority of Most vulnerable and so on.

Impact based forecasting helps in properly identification of expected impact of disaster and helps in taking proportionate Measures.

Example- If an approaching cyclone forecasting done by IMD is IMPACT BASED forecasting,

it will help in classifying the regions based on impact and help in determining Appropriate Preventive Measures to Mitigate Disaster



STRENGTHENS PREPAREDNESS

1. Proper Zoning of the areas
2. Adequate preparedness can be done by authorities.
eg. - shifting people to shelter areas in case of cyclone
3. Saving ~~down~~ loss to lives and livelihood.

Thus Disaster Management Preparedness is important component as Impact Based Forecasting

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।

With launch of more and more satellites, the Low Earth orbit is crowded.

Example - SpaceX launched 1000+ satellites for ~~inter~~ satellite based internet project STARLINK.

ASSOCIATED ISSUES

1. Risk of collision
2. Increase in space debris.
3. Reduce the countries' capabilities to launch high Earth orbit satellites.
4. Space based conflicts.
5. Reduce developing countries chance to launch satellite.

INTERNATIONAL EFFORTS —

There is need to strengthen international collaboration to reduce risks associated with Low Earth orbit crowding —

1. Outer Space Treaty 1967

which outlines broader guidelines for outer space.

2. Kessler's syndrome — which requires a country whose satellite is damaged to be paid by other country.

3. International efforts to reduce space debris.

There is need to decongest space and use space as SUSTAINABLE COMMON GOOD

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 things to spread terrorism or fear in the people to achieve vested interests

Existing Measures

1. In case of biowar, India will use its nuclear weapons and cause MAXIMUM damage.
2. Research and Development to prevent bioterrorism and to deal with after effects.

Need of Bioterrorism Law

1. Evolving technology
2. Use of NON-TRADITIONAL means to cause terrorism

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 15000 km long land
border and 7516 km long coastal
borders.

POTENTIAL OF INTEGRATED LAW ENFORCEMENT CENTRES

1. Better coordination among different agencies.
2. Check illegal migration, drug,
arms and human trafficking.
3. Better capability development of forces.

POTENTIAL OF SMART WALLS

1. Use of Modern Technology
like INFRARED SIRENS, to
alert authorities.

- 2- Sensors, Radars etc. to detect illegal movement.
- 3 Automatic Defence capabilities to catch the infiltrator.
4. Built even in harsh terrains.

India faces various border security challenges- difficult terrain, hostile neighbors, free movement regimes, fake currency circulation etc. Thus there is need of Modern Border Management.

Don't write anything in this margin (20 marks)

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 are a populist measure by governments to pay the loan back to banks on behalf of farmers.

DISADVANTAGES

1. Poor credit culture among farmers specially in election years.
2. Huge financial burden on government
3. Increases REVENUE Expenditure
4. and reduces scope for INVESTMENT in Agricultural Infrastructure.
5. Benefits only large farmers, who are capable of returning loans.
6. Small farmers are dependent on INFORMAL CREDIT and are left out.

NOT ADEQUATE FOR SUSTAINABLE AGRICULTURE

1. The farm loan waivers are not adequate because they only deal with INCOME support.
2. No investment in Agricultural infrastructure.
3. Ignores LANDLESS LABOURERS and AGRICULTURE WORKERS, thus not reducing Agricultural distress.
4. Not expanding ACCESS to FORMAL CREDIT SYSTEM.

NOT RECOMMENDED for SUSTAINABLE AGRICULTURE

1. Increases investments by farmers in FERTILISERS etc. which are detrimental for SOIL HEALTH.
2. Doesn't increase CAPITAL EXPENDITURE

in agriculture. Example - investment in machinery, tools etc.

3. Reduces scope for Investment in RESEARCH and DEVELOPMENT.

ex. Dealing with stubble waste,
Nutrient rich food (Bio-fortification)

4. Sustainable ~~develop~~ Agriculture aims at OPTIMUM UTILISATION of resources, but farm loan waivers lead to RESOURCE WASTAGE.

Example - water wastage in irrigation.

5. Reduces investment and DIVERTS ATTENTION from other Problem Areas in agriculture

Example - MARKET REFORMS,
FORWARD LINKAGE with food processing industry.

There is need to shift from populist measures like LOAN WAIVERS to investment in Research and Technological Developments to double farmers' income as

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 क्षेत्र पर ध्यान केंद्रित किया है। इस क्षेत्र 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 or the Micro Small Medium Enterprises are the engines for GROWTH of Indian Economy with more than 1 crore MSMEs in multiple sectors.

NEED TO FOCUS -

1. EMPLOYMENT

They provide employment to 11 crore people.

2. Their contribution to GDP is almost 50%.

3. EXPORT - They are major section of exports contributing 30% of all export.

4. INFORMAL NATURE OF MSMEs

Thus there is need to increase formalisation of ~~eco~~ economy.

5. MSMEs require SUPPORT of government to GROW BIG. They have potential

to become unicorns, but if ignored, they'll remain Dwarfs. (Economic Survey).

6. WOMEN EMPOWERMENT

They employ women in large numbers thus leading to financial independence.

7. Inadequate sources of CREDIT and capital.

8. Poor infrastructural development in MSMEs. Thus they require government focus. Eg. Technical Textiles

9. Huge competition from foreign goods ex. China. Eg. Toys industry.

Due to the huge importance and its CONTRIBUTION to ECONOMY, various

MEASURES BY GOVERNMENT +

1. EASY ACCESS TO CREDIT

MUDRA loans including Shishu, Kishore etc loans, psbloansin59minutes.com etc.

2. Changing definition of MSMEs in COVID-19 pandemic to allow more

businesses to take advantage of MSMES sector.

3. PROCUREMENT OF GOODS

Government-e-Marketplace (GEM) allows MSMES to list their products. Also public PROCUREMENT policy prioritises MSME goods.

4. DATA MANAGEMENT - Maintaining the records of MSMES by registering with UDYAMI portal to provide support and handholding.

5. SKILLING and TRAINING of workers and connecting with MSMES to reduce unemployment rates.

6. SIDBI is the Nodal institution for MSMES.

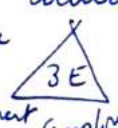
MSMES are the DRIVERS of GROWTH for any economy. There is need to provide adequate support, skilling, credit, innovation, investment, Technological initiatives to help them GROW BIG and enable India

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 has huge DEMOGRAPHIC DIVIDEND potential with 55% of people in 15-59 working age group.

However, there is need for adequate SKILLING, RE-SKILLING, and UPSKILLING of the youth with latest technological development and IR 4.0.

But SKILLING faces 3E challenge 

1. EDUCATION

i) While gross enrollment in primary education is above 95%, the dropouts are high in Higher Education.

ii) Education curriculum is outdated and not in sync with current technologies.
(eg) example - Artificial intelligence etc.

- iii) According to ASER report, the students of Class 5 don't know basic subtraction.
- iv) The teachers also lack proper skills of and Training.
- v) Less focus on vocational education.

EMPLOYMENT -

- i) ~~Unemployment~~ was at all time high of 27% in APRIL 2020 (CMIE)
- ii) Lack of opportunities in labour-intensive sectors. E.g. Textiles.
- iii) Disguised unemployment problem in agriculture.
- iv) Due to poverty, most people settle for low paying jobs.
- v) Huge INFORMAL sector - (80% of economy)

EMPLOYABILITY

- i) According to a survey, 80% of Indian engineers are unemployable.
- ii) Inadequate focus on personality development and communication skills.
- iii) ~~Less~~ Less Internship opportunities in colleges.

Thus skilling suffers from this 3E challenge.

However, government has taken multiple steps —

1. National Education Policy 2020 —
focus on vocational education,
New age Technologies e.g. AI, ML.
2. ASEEM portal for skilled Employee
employer Matching.
3. Focus on Entrepreneurship and
Ease of Doing Business
- → To MAKE JOB CREATORS rather
than JOB SEEKERS.
4. PM Kaushal Vikas Yojna — to focus
on skilling and certification courses.
5. Schemes like PLI, Atmanirbhar Bharat
to Boost INVESTMENTS in India.
6. National Infrastructure pipeline etc. will
generate employment opportunities.

India has huge potential to replace China

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 deals with processes from Harvesting to actual sale of agricultural produce including TRANSPORTATION, STORAGE, VALUE ADDITION and PROCESSING.

IMPORTANCE OF AGRI MARKETING

1. Realise the best price for produce.
Eg. sale in Mandi.
2. Reduce wastage
3. Helps in connecting FARM to FORK.
4. Processes like Food Processing help in value Addition. Ex. Mango jam from Mango.
5. Increasing Exports of agricultural products. Eg. 1st in Sugar Export.

6. Ease to customers to buy best quality agricultural produce.
7. Ensures forward and backward linkages. Eg. value addition processes, Mega Food parks.
8. Generates DEMAND for the goods.

However, Agricultural Marketing suffers from Multiple challenges, which leads to Agricultural Distress.

INSTITUTIONAL ISSUES

1. Farmers are required to make 1st sale in APMC Mandis where farmers face various issues —
 - i) Inadequate price of produce.
 - ii) Monopoly of Mandis and CARTELISATION of Traders
 - iii) Information ~~inadequate~~ inequality
 - iv) Reduced prices on grounds like Moisture content, shape of produce etc.
2. Poor regulation of the APMC Mandis.
3. High Taxes (upto 10% in Punjab Mandis)
4. Less private procurement.

INFRASTRUCTURE ISSUES

1. Inadequate infrastructure .
ex. cold storage infrastructure for perishable items like fruits .
2. Poor connectivity between farms and Mandis .
3. Lack of Technological interventions for storage, weighing etc .
4. Inadequate investment in infrastructure

Thus Agri marketing has huge scope of improvement . Initiatives like allowing ~~public~~ private procurement, sale at MSP ; creation of Mega Food Parks, Kisan Rail and Kisan Udan, INVESTMENT in infrastructure etc. are required to help farmers ~~achieve~~ realise true price of their crops and double their incomes .

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।

Oceans, seas and other water bodies act as the dumping ground for major anthropogenic waste like PLASTIC, GARBAGE, SEWAGE etc. which causes MARINE LITTER.

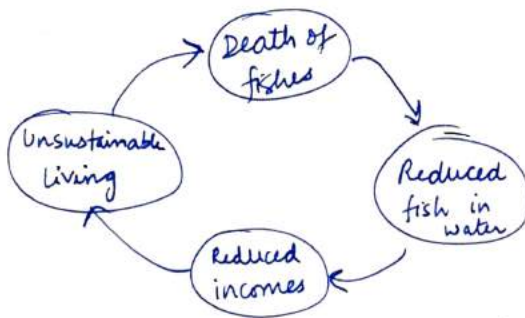
Marine litter is an ENVIRONMENTAL ISSUE

1. Plastics which enter ocean stay for years. and cause MICROPLASTIC pollution, which is TOXIC for marine animals.
2. The wastes cover the water surface, preventing LIGHT to enter, thus death of phytoplanktons and other marine life.
3. Wastes like Masks strings gets stuck in Ducks feet, fins etc. thus causing their death.

4. Many marine animals eat this waste, thinking as food, but is TOXIC.
5. Pollution on coastlines.

SOCIO - ECONOMIC ISSUE

1. Livelihood of fishermen hurt



2. BIOMAGNIFICATION and BIOMAGNIFICATION of the litter in Marine food chain and ultimately in humans.
3. Reduces TOURISM opportunities due to Dirty Beaches.
Ex. Mumbai's beaches.
4. It also alters the WATER CYCLE, thus affecting PRECIPITATION.

Hence Marine litter is a grave environmental and socio-economic problem.

[STEPS BY GLOBAL COMMUNITY]-

1. SDG-14 (LIFE UNDER WATER) to protect the marine life from this pollution.
2. Blue flag certification to Beaches for cleanliness.
eg. Radhargan Beach in India
3. Initiatives to clean marine pollution and reduce usage of SINGLE USE PLASTIC.
4. Coastal Regulation Zones to prevent the pollution of coastal areas.

There is The biggest threat our planet is the thought that SOMEONE else will save it. Hence the TIME To ACT is NOW!

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 refers to the floods like condition and rise in water in a region in a very short time (usually minutes)

VULNERABILITY TO FLASH FLOODS

1. Increased occurrence of CLOUD BURSTS, specially in hilly areas, which causes flash floods downstream.
2. Topography of region, such that water gets accumulated very fast.
Eg. valleys.
3. Extreme weather events, like incessant ~~flood~~^{rain} in very small time.
Eg. Recent flash floods in Chennai.

4. Anthropogenic Reasons -

i) Sudden Release of water from Dam

eg. Mullaperiyar Dam, Kerala.

ii) Washing away of Dam

eg. Tapodharan dam in Uttarakhand (2014)

iii) Poor drainage system

5. Encroachment of flood plains.

due to increasing population and
unplanned urbanisation.

6. Sudden Landslide - carrying water
and debris leading to inundation.
eg. Uttarakhand floods 2013.

MEASURES FOR BETTER RESILIENCE

1. Scientific management of water
in DAMS before monsoon season.

2. Proper and timely cleaning of
DRAINS, and sewage system.

3. Construction of STORM DRAINS to quickly remove excess water.
4. Regular maintenance of dams.
5. Proper urban planning and wasteland management.
6. Conservation of WETLANDS.

FLASH FLOOD GUIDANCE SYSTEM

FFGS was launched and operated by IMD to reduce the impact and improve PREPAREDNESS for Flash floods.

The guidelines talk about -

- i) Measures to be taken at time of flash floods.
- ii) Better preparedness to reduce vulnerability and risk.
- iii) Community preparation.

There is need to spread awareness among local community about these recently launched FFGS to reduce the

Don't write anything in the margin (it will be marked as extra)

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 based energy like Green
hydrogen is the FUEL OF FUTURE.
because hydrogen fuel is Clean,
Secure and Affordable.

ROLE OF HYDROGEN BASED ENERGY—

1. It is a clean energy source with only water as BY-PRODUCT.
2. It is Available in ABUNDANCE on earth.
3. Diversification of Energy Sources.
4. It will help India to achieve its CLIMATE Commitments and Achieve Net Carbon Neutrality by 2070.
5. Reduce IMPORT BILL and Current Account Deficit.
6. Affordable energy source.

POTENTIAL —1. Hydrogen-Fuel cells

To store renewable energy. ex. energy generated from solar energy.

2. HYDROGEN as CLEAN FUEL

Using hydrogen (Green Hydrogen) as source of fuel.

3. H-CNG buses being used in Delhi.

To realise this potential, government has taken various INITIATIVES like National HYDROGEN MISSION, Green Hydrogen Promotion Cell and investment in Research and Development.

However HYDROGEN BASED ENERGY has following CHALLENGES

1. INFLAMMABLE —

which makes it difficult to store hydrogen

2. Grey hydrogen —
which is formed from fossil fuels thus
contributing to Green house gas emissions and
pollution.
3. Huge Initial capital —
The initial capital cost for hydrogen
is very high.
4. Lack of Technological Advancement to
fully utilise the potential of hydrogen.

We are the first generation to feel
the impact of climate change and
the last one which can do something
to CONTROL I.T (upto 1.5°C) and
HYDROGEN BASED energy has huge
potential in it.

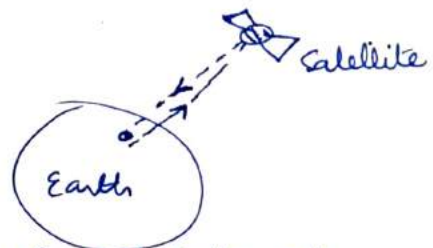
18. Despite the huge promise of satellite-based internet connectivity, it hasn't gained traction on a significant commercial scale, especially in India. Discuss.

(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।

Space-X has launched 1000+ satellites and will launch many more for its Project - STARLINK, which will provide SATELLITE based internet on entire globe.

Satellite based internet, unlike wired internet, receives signals and transmits back to the satellite for providing internet.



Satellite Based Internet.

HUGE PROMISE

1. It will provide INTERNET CONNECTIVITY in the REMOTEST of Areas where wired internet connection is not possible.
eg. Inaccessible Hilly areas in North East.

2. LOW LATENCY and High speed internet, when the satellites are placed in LOW-EARTH ORBITS.
3. Reduced Disruptions in the internet connectivity.
4. MINIMAL INFRASTRUCTURE to access internet. i.e. A mobile phone and an Antenna.
5. One Time Investment only.
6. Expand the Reach of Internet across globe. Eg. Antarctica.

However, it has GAINED LESS TRACTION IN INDIA.

Barring little initiatives by telecom operators like Airtel, There is little progress in India because -

1. GOVERNMENT PUSH TO BHARATNET and Digital Broadband Highways — To provide internet in 2.5 lakh gram PANCHAYATS by OPTICAL FIBRE.

2. HIGH COST of launching these satellites in low Earth Orbit and their MAINTAINENCE.
3. Less investment in its Research and Development.
4. DISRUPTIONS in internet due to SPACE DEBRIS and satellite COLLAPSE.
5. Less users ^{DEMAND} for satellite based internet in Highly Dense Areas which have high speed Broadband.

There is need to do more research and tap benefits of Satellite Based internet.

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।

Intelligence gathering and infrastructure
is important component for entire
SECURITY of country.

Example - 26/11 was possible because of
lack of proper intelligence capabilities
and coastal defence system.

IT IS REACTIVE and INCREMENTAL

1. Only after an attack takes place,
there are measures to improve
the intelligence capabilities.

eg. Kargil war 1999.

2. India lacks adequate infrastructure
for intelligence gathering.

eg. Outdated Equipments.

3. Instances of intelligence failure.

These vulnerabilities are extensively used by Marxists and Insurgents.

4. Intelligence failure results in Botched operations and huge backlash from civil society.

Ex. recent Nagaland intelligence failure where 7 civilians were killed by army.

5. Lack of proper training of the intelligence agencies.

6. IMPROPER FUNDS for intelligence equipments.

Intelligence forms important component of FORMING OFFENSIVE and DEFENSIVE STRATEGIES.

Thus there is need of CONCRETE FRAMEWORK —

1. Proper training and skilling with lessons from international organisations like MOSSAD. (ISRAEL)
2. Proactive and timely collection of intelligence.
3. Better intelligence sharing and COORDINATION within different agencies. Eg. RAW, IB, ED etc.
4. Use of Better and New Technologies for information gathering.
5. Vast network of spies.
6. Human capacity development
7. Adequate budgetary allocation

In order for India to secure its borders and maintain internal security, there is need to strengthen INTELLIGENCE INFRASTRUCTURE.

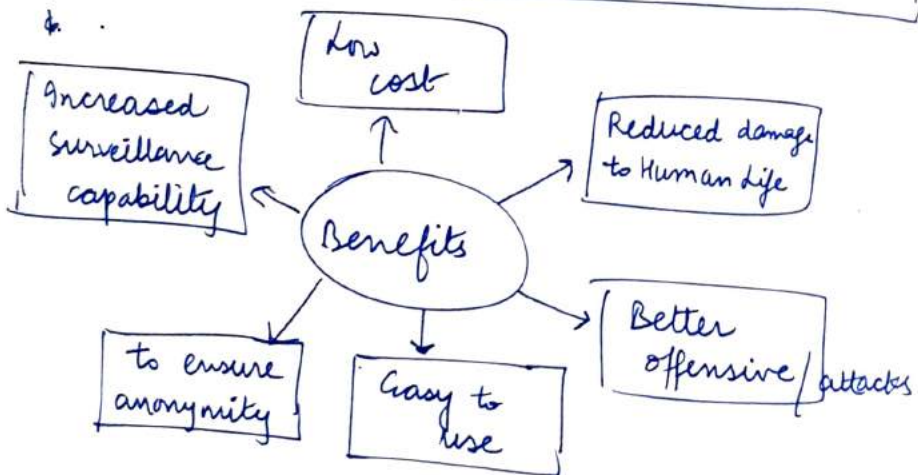
20. In light of the prominent instances of drone attacks by both state and non state actors, assess the challenges and capabilities of India in dealing with such security threats.

(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।

There was recent attack on Jammu airport by a drone. (2021). Similarly the role of Drones in Azerbaijan - Armenia conflict over Nagorno Karabakh can't be ignored.

DRONE ATTACKS using the unmanned Aerial Vehicles have increased -



There have been instances of drones being used to SUPPLY ARMS and AMMUNITION from Pakistan to Punjab region.

Use of Drones by China to do surveillance of the conflict areas in Ladakh.

Drones are also used to carry small scale attacks on the enemy, and improve RECONNAISSANCE capabilities.

CHALLENGES IN DEALING WITH THREAT OF DRONES

1. Drones are low cost investment and even if shot down by security agencies cause little damage to the drone owner. Ex. Pakistan sending multiple drones across LOC.
2. Pakistan's collaboration with TURKEY which develop world class drones (Turkish drones used by Azerbaijan)
3. Even before drone is shot, it sends all the INTELLIGENCE and RECONNAISSANCE info back to owner.
4. Little Risk to human life.
∴ greater use by Terrorists etc.

5. Very difficult to identify the source/owner of drone.
6. S-400 etc don't work against drones.

CAPABILITIES OF INDIA

1. Anti drone Radar being developed by DRDO.
Before this drones had to be MANUALLY spotted and shot.
2. Defence Collaboration with ISRAEL and USA.
eg. Heron drone.
3. India is also using drones for intelligence gathering and Reconnaissance.

Drones are the weapons of New generation Warfare and we need to upgrade our capabilities accordingly to uphold our Safety and Security.