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FIAS – MGP 2022 (C-10) – GS Paper #3



## GENERAL STUDIES

Name Of Candidate **MANAN AGARWAL**Roll No. **1910082934**Date: **23/07/2022**

Time Allowed: Three Hours

Maximum Marks: 250

INDEX TABLE			INSTRUCTION
Q. No.	Max. Marks	Marks Obtained	<p>1. Please do furnish Name, Email, Roll No and Mobile in the answer sheet.</p> <p>2. There are TWENTY questions printed in ENGLISH &amp; HINDI, all questions are compulsory.</p> <p>3. The number of marks carried by a question/part is indicated against it.</p> <p>4. 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.</p> <p>5. Word limit in questions, if specified, should be adhered to. Any page or portion of the page left blank in the Question-Cum Answer Booklet must be clearly Struck off.</p> <p><i>Any specific messages for ForumIAS Mentors/Evaluators with respect to your copy? Write it here.</i></p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>
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<b>Evaluator's Discretion:</b>			<b>For Student Only</b>
			Start Time   <b>09:00 AM</b>   End Time   <b>12:08 PM</b>
<b>Total Marks:</b>			Mode Of Examination: Online <input checked="" type="checkbox"/> Offline <input type="checkbox"/>
<b>Evaluator's Discretion:</b> This is the marks awarded at the discretion of the evaluator based on your overall impression, on the basis of (but not limited to) your handwriting, presentation, use of diagrams, flowcharts, facts and figures or absolutely anything that he/she liked in your copy.			<b>For Office Use Only</b>
			ECN CODE:   EG:   Evaluation Date:

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**Note:** You can discuss your evaluated copy with the Mentor. Raise a ticket from your portal to schedule a mentor call or visit the offline centre to meet mentor (all 7 days, Timings - 11 AM to 6 PM). Further if you are unsatisfied with the evaluation, you can seek re-evaluation of the copy.

Parameters	Excellent	Very Good	Good	Average	Poor	Very Poor
Language						
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ADDITIONAL REMARKS

Q.1) Employment problems of rural and urban areas differ in nature, but their solutions are interdependent and interrelated. Analyze. (10 marks, 150 words)

ग्रामीण और शहरी क्षेत्रों की रोजगार समस्याएं प्रकृति में भिन्न हैं, लेकिन उनके समाधान अन्योन्याश्रित और परस्पर संबंधित हैं। विश्लेषण कीजिए। (10 अंक, 150 शब्द)

Employment problems are related to lack of jobs, underemployment, disguised unemployment that deny an individual full benefits of their potential.

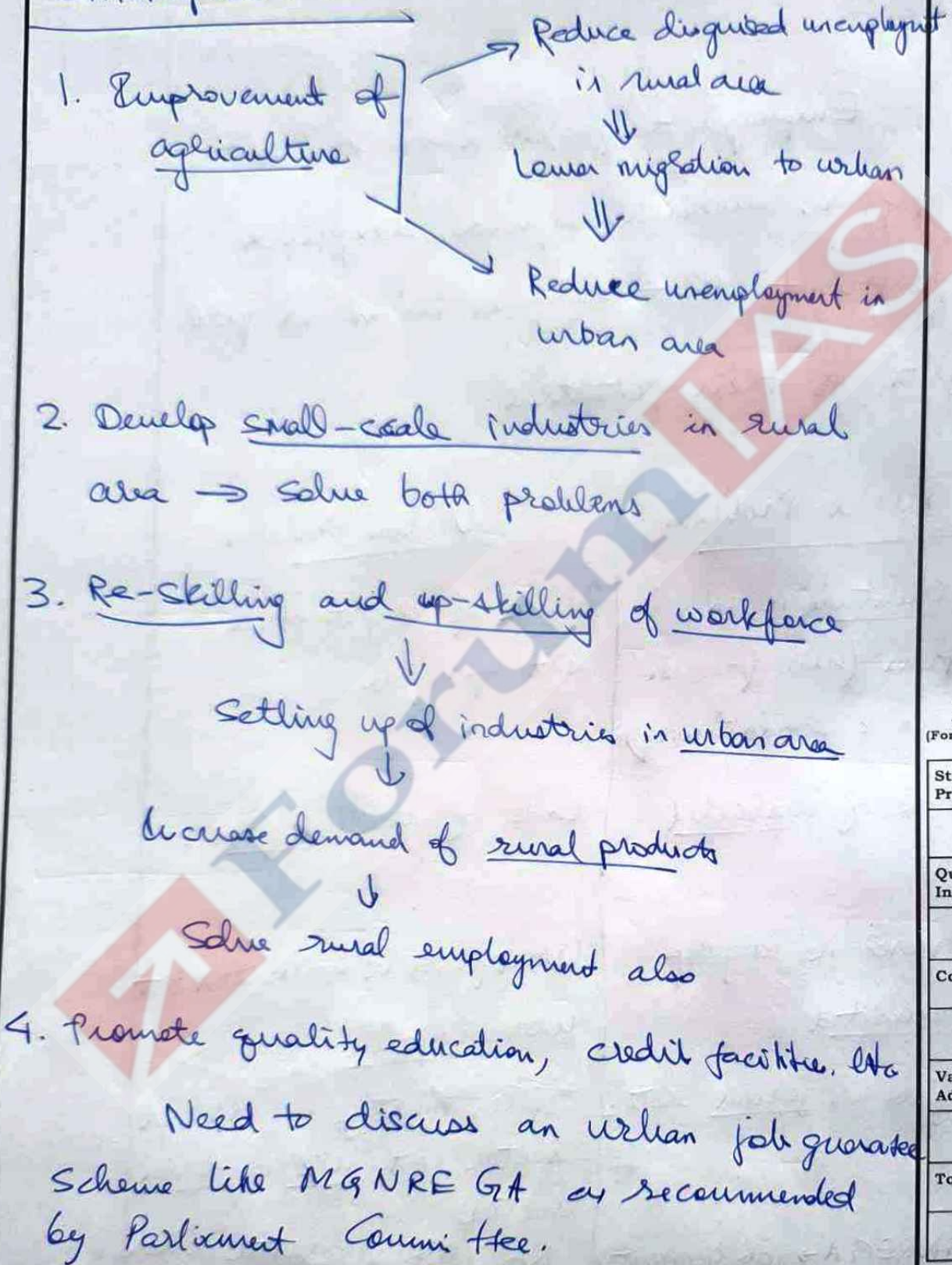
### Rural Problem

1. Agriculture is in distress (low farmer income & productivity)
2. Lack of unskilled jobs
3. Workforce is largely uneducated
4. No job in formal sector
5. MGNREGA → job guarantee

### Urban Problem

- Lack of right skill set for job
- Lack of skilled jobs
- Workforce is educated but unemployable
- Jobs mostly in informal sector yet 10% in formal sector
- No job guarantee scheme

Interdependent Solutions



<b>Feedback</b>	
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Structure / Presentation	
Question Interpretation	
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Q.2) Imported inflation is compounding the challenges of post-pandemic recovery for the Indian economy. Discuss. (10 marks, 150 words)

आयातित मुद्रास्फीति भारतीय अर्थव्यवस्था के लिए महामारी के बाद की पुनर्बहाली की चुनौतियों को बढ़ा रही है। चर्चा कीजिए। (10 अंक, 150 शब्द)

Imported inflation refers to increase in the price level of goods and services in the economy due to imported commodities getting expensive.

### Contribution of Imported Inflation

1. India imports over 80% of crude oil and 50% of natural gas.
  - 1.1 Due to Russia-Ukraine war and rise in global demand, prices of oil and gas have risen by over 40%.
2. Imported coal, gold, metals (lithium, chromite, etc.) by India are also expensive.
3. Rise in fertiliser prices  $\Rightarrow$  led to increase in government subsidy outflow.
4. Increased interest rates by US Fed  $\Rightarrow$  rise in cost of capital for Indian companies.

## Challenges Compounded

1. Increase in prices due to supply-side inflation



Lower demand ⇒ Lower production level



Job cuts



Reduced growth rate of GDP

2. Higher fiscal deficit of government



Lower development spend

3. 5 crore people pushed into extreme poverty during 2020 (Oxfam) find difficult to regain income

4. Increase in inequality and lower quality of life

## Way Forward

1. Increase domestic production of sustainable energy

2. Improve logistic efficiency by PM Gati Shakti

3. Redistribution of national income by wealth tax

The vision of Atmanirbhar Bharat can be achieved only through mitigating inflation and inclusive growth.

### Feedback

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Q.3) What do you understand by natural farming? How can it help in building climate resilient agriculture? (10 marks, 150 words)

11:45

प्राकृतिक खेती से आप क्या समझते हैं? यह जलवायु अनुकूल कृषि के निर्माण में कैसे मदद कर सकती है?

(10 अंक, 150 शब्द)

Natural farming refers to use of naturally available inputs

- Traditional variety of seeds
- cow-dung, manure for nutrients
- zero tillage
- mulching to protect soil nutrients
- use of micro-irrigation

It was pioneered by Selbhash Palekar in the 1990s to prevent adverse impact of Green Revolution.

### Benefits of Natural Farming

1. Reduce cost of inputs  $\Rightarrow$   $\downarrow$  farmer indebtedness  
 $\Downarrow$   
 $\downarrow$  farmer suicides
2. Lower pollution levels due to fertiliser, pesticides ensures ecological sustainability of farming
3. Fiscal sustainability due to lower subsidy burden on government.

## Natural Farming For Climate Resilient Agriculture

1. Less dependence on industrially produced raw-materials (fertilisers, GM seeds)



local availability of raw materials



not impacted by supply chain disruptions due to extreme weather events

2. Lesser impact on environment → soil organic carbon protected



microorganisms of soil are protected

↓ soil moisture retained



Climate change mitigation and better carbon sequestration

3. Reduce water requirement ⇒ withstand droughts better

The #Paranpalagat Krishi Vikas Yojana and Zero Budget Natural Farming will go a long way to ensure SMART and SUSTAINABLE agriculture.

### Feedback

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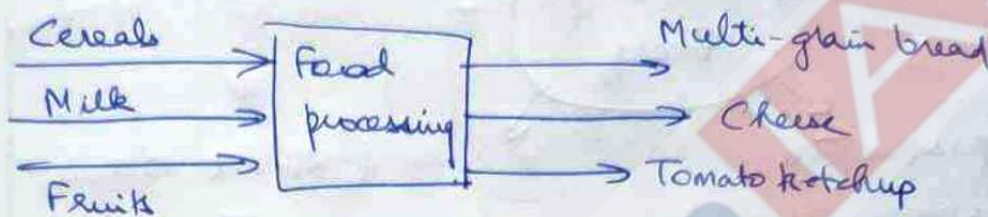
Total



Q.4) Food Processing sector must be developed as one of the principal industries in the country for reasons that go beyond agriculture. Elucidate. (10 marks, 150 words)

खाद्य प्रसंस्करण क्षेत्र को देश के प्राथमिक उद्योगों में से एक के रूप में उन कारणों से विकसित किया जाना चाहिए जो कि कृषि से परे हैं। स्पष्ट कीजिए। (10 अंक, 150 शब्द)

Food processing sector contributes 10% to India's exports and employs nearly 1 crore people (NITI Aayog).



### Need to Promote Food Processing Sector

1. Labour intensive  $\Rightarrow$  employs large number of diverse labour  
(capital to labour ratio  $\rightarrow$  ₹8 Lakh, avg. MSME  $\rightarrow$  ₹14L)
2. Crucial to raise farmers income (Ashok Dalua report)
3. Helps raise nutrition levels (e.g. oats, digestive biscuits)
4. Improve food preservation and lower food wastage  
e.g. dehydrated onion flakes
5. Reduce price volatility (e.g. tomato ketchup produced during ~~harvest~~ <sup>harvest</sup> season)

6. Attract FDI, investment and GDP growth
7. Crucial for India due to rising consciousness about nutrition, working mothers, etc



To meet the above challenges, the government has launched schemes like PLI (mozzarella cheese, marine, millet, etc.), Mega Food Park, PM Kisan Sampada Yojana, etc. which will help push the sunrise sector.

Feedback

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Q.5) Space based technologies are helpful in not only monitoring development, but also enhancing it. Discuss. (10 marks, 150 words)

अंतरिक्ष आधारित प्रौद्योगिकियां न केवल विकास की निगरानी करने में सहायक हैं, बल्कि इसे बढ़ाने में भी सहायक हैं। चर्चा कीजिए। (10 अंक, 150 शब्द)

India's space sector has successfully launched over 100 launch vehicles <sup>highlight</sup> ~~studies~~ its potential.

## Benefits of Space Based Technologies

### 1. Monitoring Development

#### 1.1 Earth-observation satellites

Crop monitoring

Satellite imagery

road projects

housing

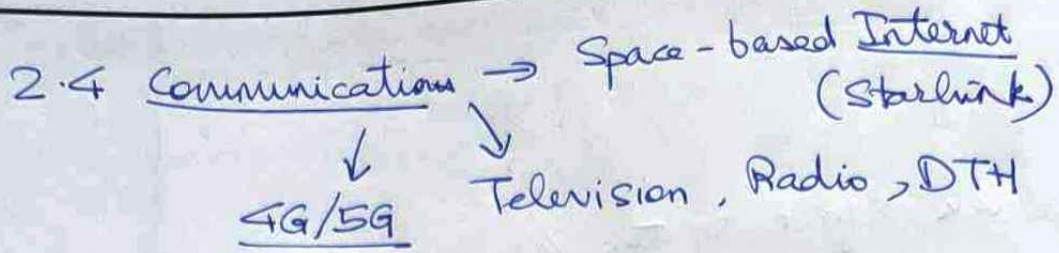
defence

### 2. Enhancing Development

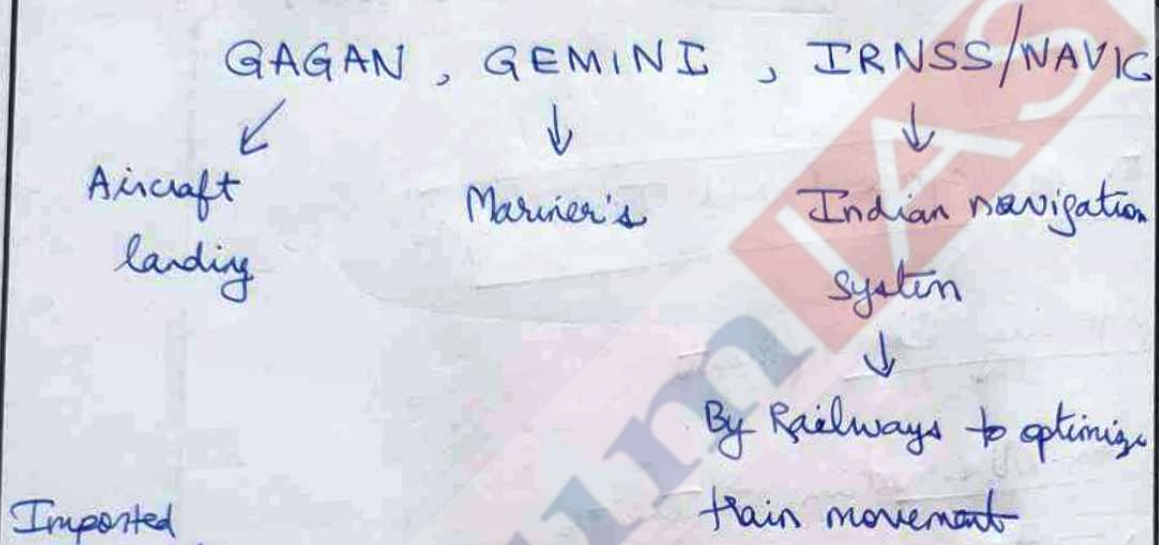
2.1 Use of GPS/GIS based applications to plan urban projects

2.2 Weather forecasting → right cropping choices

2.3 Disaster management → save life & property



2.5 Position, Navigation & Timing



Imported equipment

Challenges

- High cost
- ↳ Resource diverted from poverty alleviation

Need to balance use of space-based activities via private sector through ISPA, IN-SPACE, NSIL, etc and SATNAV Policy 2021.

Feedback (For OFFICE use)
Structure/Presentation
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Total

Q.6) How are fuel cell electric vehicle (FCEV) different from battery electric vehicle (BEV)? Highlighting advantages of electric vehicles, suggest measures for accelerating e-mobility adoption in the country. (10 marks, 150 words)

ईंधन सेल इलेक्ट्रिक वाहन (FCEV) बैटरी इलेक्ट्रिक वाहन (BEV) से कैसे भिन्न हैं? इलेक्ट्रिक वाहनों के लाभों पर प्रकाश डालते हुए, देश में ई-मोबिलिटी अपनाने में तेजी लाने के उपाय सुझाएं। (10 अंक, 150 शब्द)

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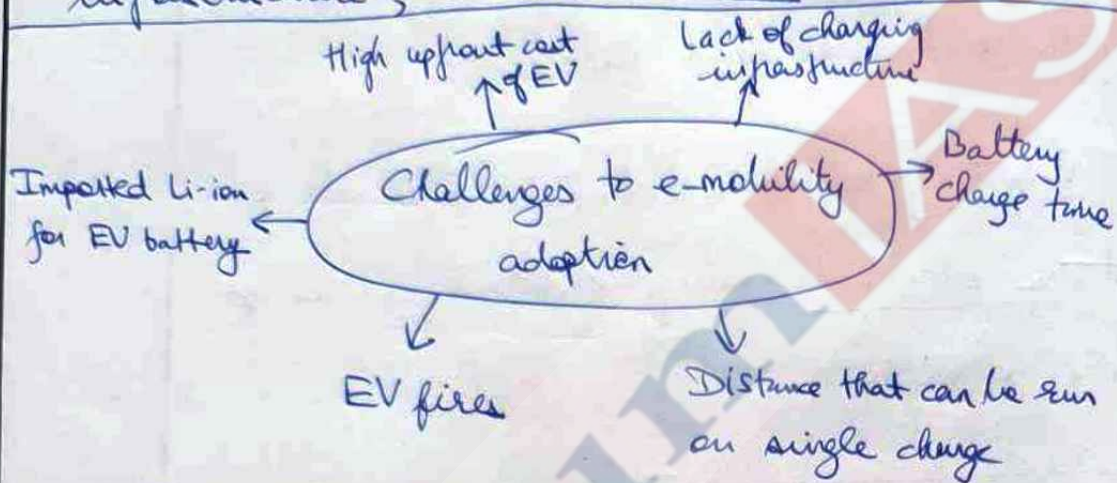
Fuel Cell Electric Vehicles (FCEV) run on hydrogen-based energy by converting hydrogen and oxygen to water and heat.

Battery Electric Vehicles (BEV) use Li-ion battery charged using external source to power the vehicle.

### Advantages of Electric Vehicles (EVs)

1. If energy <sup>to</sup> charged is derived from renewable energy, EVs can help reduce greenhouse gas emissions
2. Lower pollution levels (PM<sub>2.5</sub>, NO<sub>x</sub>, SO<sub>x</sub>, Pb, etc) due to use of power source
3. Lower noise and vibration levels in vehicle
4. Can help reduce India's dependence on imported crude oil (80%) and natural gas (50%)

5. Lower maintenance and running cost of vehicle due to clean fuel, less moving parts, etc
6. Higher energy use efficiency
7. Promote ancillary industries — batteries, charging infrastructure, attract investment



### Measures to Accelerate Adoption

1. Introduce battery swapping technology (NITI Aayog)
2. PLI Scheme of Advance Cell Batteries to lower cost
3. Focus on National Hydrogen Mission will <sup>promote</sup> FCEVs
4. Reduce GST on EVs from 28% to lower cost

Schemes like FAME will also promote EV adoption and help make India Net Zero by 2070.

Q.7) Ensuring sustainable consumption and production patterns for an environmentally conscious world is not possible without fundamental changes in lifestyle. Discuss this statement in light of Lifestyle for the Environment (LIFE) Movement. (10 marks, 150 words)

जीवन शैली में मूलभूत परिवर्तन लाए बिना पर्यावरण के प्रति जागरूक दुनिया के लिए सतत उपभोग और उत्पादन पैटर्न सुनिश्चित करना संभव नहीं है। पर्यावरण के लिए जीवन शैली (LIFE) आंदोलन के आलोक में इस कथन की चर्चा कीजिए। (10 अंक, 150 शब्द)

Top 10% of ~~an~~ income group is responsible for 50% of GHG emissions while bottom 50% just 7% GHG emitted (Oxfam).

### Environment & Lifestyle

1. Energy usage be lowered

↳ Smart buildings  
 ↳ lighting      ↳ cooling      ↳ ventilation

2. Waste generation needs to be regulated

↳ Through reduce, reuse, recycle pattern  
 ↳ Circular Model of Economy

### 3. Mobility

- ↳ Use of public transport over private
- ↳ Prefer EVs instead of diesel
- ↳ Small personal vehicles over SUVs
- ↳ Lower business class travel

### 4. Personal products

- ↳ Prefer those produced sustainably
- ↳ Switch off lights, fans when not in use

Life Movement focusses on above aspects of sustainable consumption to ensure sustainable development & achieving SDGs

#### Feedback

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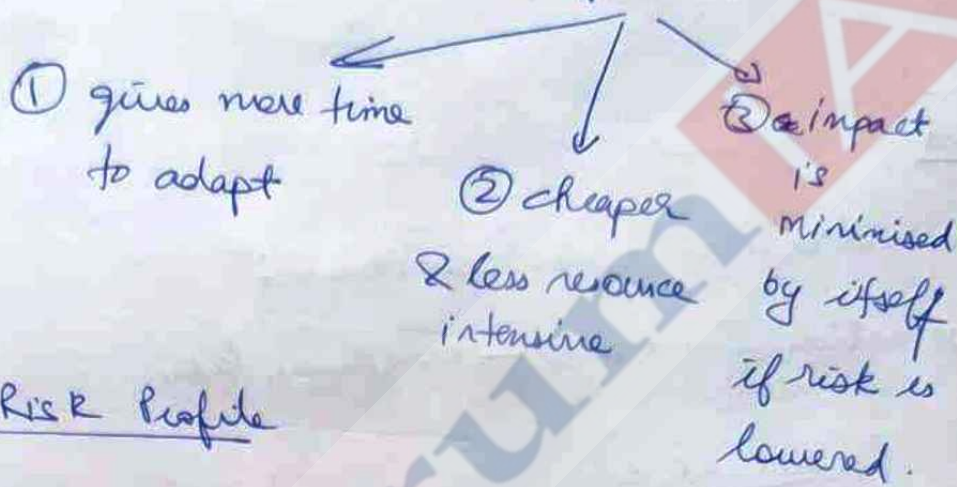
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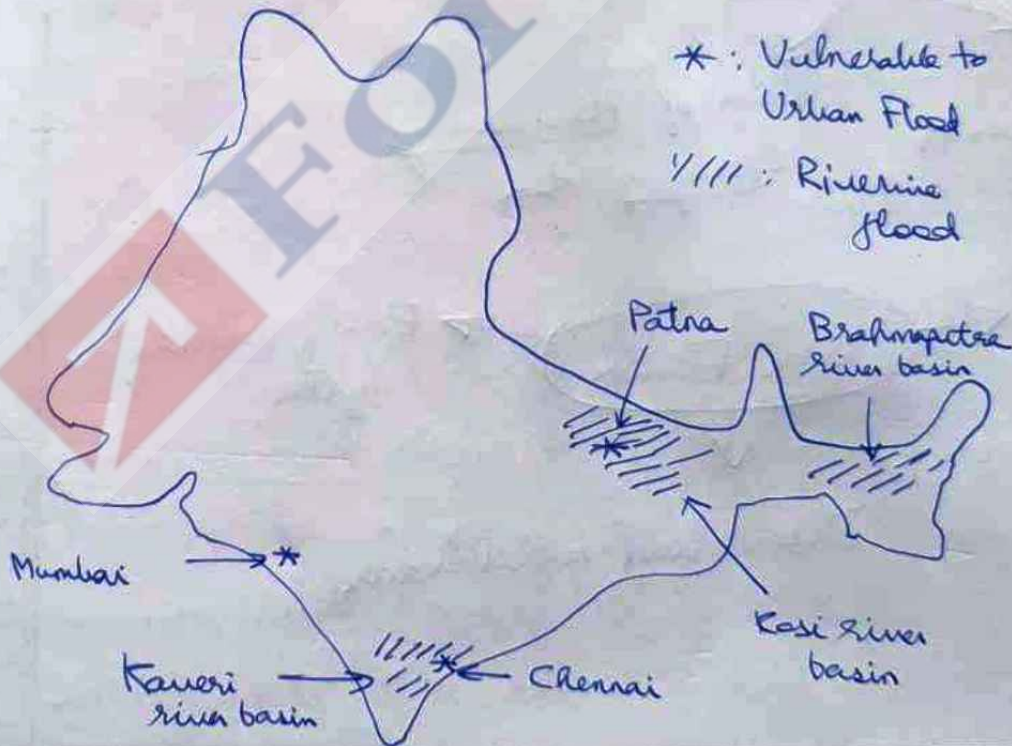
Q.8) Managing risks, rather than impacts, lies at the core of effective disaster management strategy. In light of this statement, describe the flood risk profile of India and evaluate preparedness for effective flood management. (10 marks, 150 words)

प्रभावों के बजाय जोखिमों का प्रबंधन, प्रभावी आपदा प्रबंधन रणनीति के मूल में निहित है। इस कथन के आलोक में, भारत के बाढ़ जोखिम प्रोफाइल का वर्णन करें और प्रभावी बाढ़ प्रबंधन के लिए तैयारियों का मूल्यांकन करें। (10 अंक, 150 शब्द)

A proactive disaster management strategy focuses on managing risks



Flood Risk Profile



Preparedness

- ↳ Use of IFLWS at Mumbai & Chennai
- ↳ River management at Kosi and Brahmaputra through river data

Challenges

- ↳ Poor drainage system in Mumbai
- ↳ Destruction of wetlands — mangroves, lakes

↳ Brahmaputra

Breach of embankments

Lack of trans boundary sharing of data

Hazard Situation

Way Forward

Early warning system

International collaboration

Feedback

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Question Interpretation

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Value Addition

Total

Preparedness

↳ Use of IFLOWS at Mumbai & Chennai

↳ River management at Kosi and Brahmaputra through river data

Challenge

↳ Poor drainage system in Mumbai

↳ Destruction of wetlands — mangroves, lakes

↳ ~~&~~ Brahmaputra

Breach of embankments

Lack of trans boundary sharing of data

Hazard Situation

Way Forward

Early warning system

International collaboration

Feedback (For OFFICE use)

Structure/Presentation

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Total

Q.9) Discuss the salient features of Agnipath scheme. Underlining the benefits of the scheme, mention ways to overcome associated challenges. (10 marks, 150 words)

अग्निपथ योजना की मुख्य विशेषताओं की चर्चा कीजिए। योजना के लाभों को रेखांकित करते हुए, संबंधित चुनौतियों को दूर करने के तरीकों का उल्लेख करें। (10 अंक, 150 शब्द)

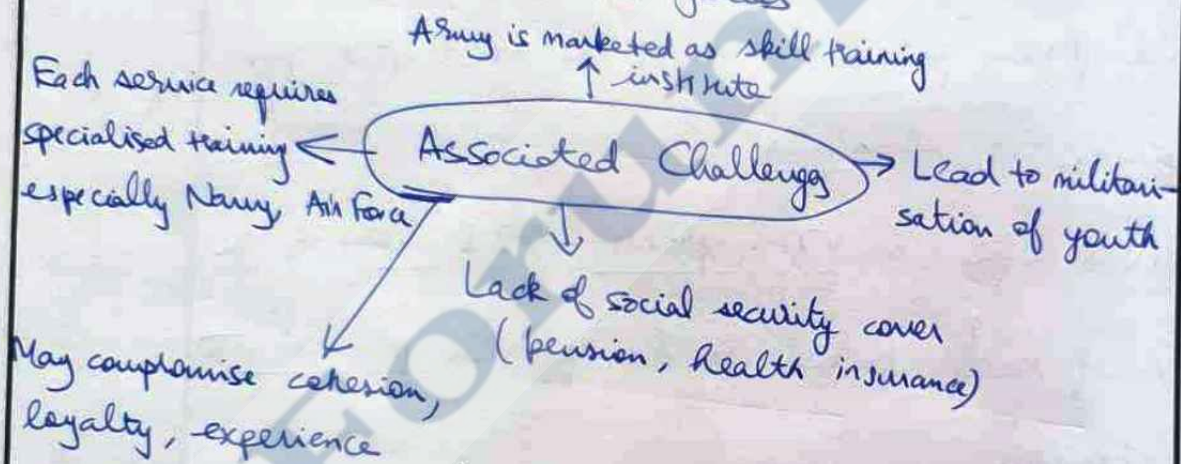
Based on the recommendations of the Kargil Review Committee to lower the average age of armed forces from present, 32 years, the Agnipath scheme was announced.

### Features of Agnipath Scheme

1. Armed forces personnel will be recruited for a tenure of 4 years
2. Eligible age : 17.5 years - 21 years of age
3. 25% of each batch to be offered permanent commission
4. Training period of 6 months
5. Lumpsum amount to be paid at end of 4 years in addition to monthly salary
6. ex-Agniveers will be preferred in recruitment to CAPF, state police, etc.

## Benefits of Agnipath

1. Lower the age profile from 32 years to 26 years
2. Reduce pension and bill of the defence ministry and make space for capital modernisation
3. Ensure a modern and tech-savvy armed force
4. Instill discipline and service value in youth
5. Recruitment to be for all caste and class  $\Rightarrow$  end class distinctions in the forces



## Overcome Challenges

1. Longer tenure period for recruits of say 8-10 years
  2. Ensure social security for ex-Agniveers
  3. Pilot project for small group before full-scale launch
- Need to tread carefully to ensure national security along with employment imperatives.

Q.10) Examine how advancements in technology has allowed organize crime syndicates to not only expand but also diversify their activities. Also recommend suitable measures to tackle the menace of organized crime. (10 marks, 150 words)

परीक्षण करें कि कैसे प्रौद्योगिकी में प्रगति ने संगठित अपराध सिंडिकेट को न केवल विस्तार करने बल्कि उनकी गतिविधियों में विविधता लाने की भी अनुमति दी है। संगठित अपराध के खतरे से निपटने के लिए उपयुक्त उपायों की भी सिफारिश करें। (10 अंक, 150 शब्द)

Organized crime refers to crime by a group of people hierarchically organized with motive to earn money through use of violence as required.

### Advancements in Technology

1. Use of cryptocurrency like Bitcoin to receive proceeds of crime
  - ↳ anonymity
  - ↳ no paper trail
2. Use of OTT services and VoIP to place ransom calls, undetected by surveillance
3. Dark Web, VPN, etc. used to sell contraband goods
4. Publicly available massive data used to

profile potential targets

5. Spyware like Pegasus used to collect information for blackmail

6. Ransomware used to ~~at~~ attack infrastructure (e.g. attack on US oil pipelines (2021))

### Measures to Tackle

1. Capacity building of cybersecurity professionals

2. Involve private sector to build resilience

3. Awareness of people about use of possible methods

4. Strict regulation by legal mechanisms & rules

Such as diversified activities from kidnapping, extortion to ransomware, privacy attacks, etc, the new Cyber Security policy must incorporate presence of organized criminal groups,

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Q.11) Achievement of a 400 billion USD merchandise export is a result of concerted and collective efforts towards an Atmanirbhar Bharat. Identify various factors responsible for this feat. What measures will you suggest to place India at the centre of global supply chains? (15 marks, 250 words)

400 बिलियन अमरीकी डालर के व्यापारिक निर्यात की उपलब्धि एक आत्मनिर्भर भारत की दिशा में ठोस और सामूहिक प्रयासों का परिणाम है। इस उपलब्धि के लिए जिम्मेदार विभिन्न कारकों की पहचान करें। भारत को वैश्विक आपूर्ति शृंखलाओं के केंद्र में रखने के लिए आप क्या उपाय सुझाएंगे? (15 अंक, 250 शब्द)

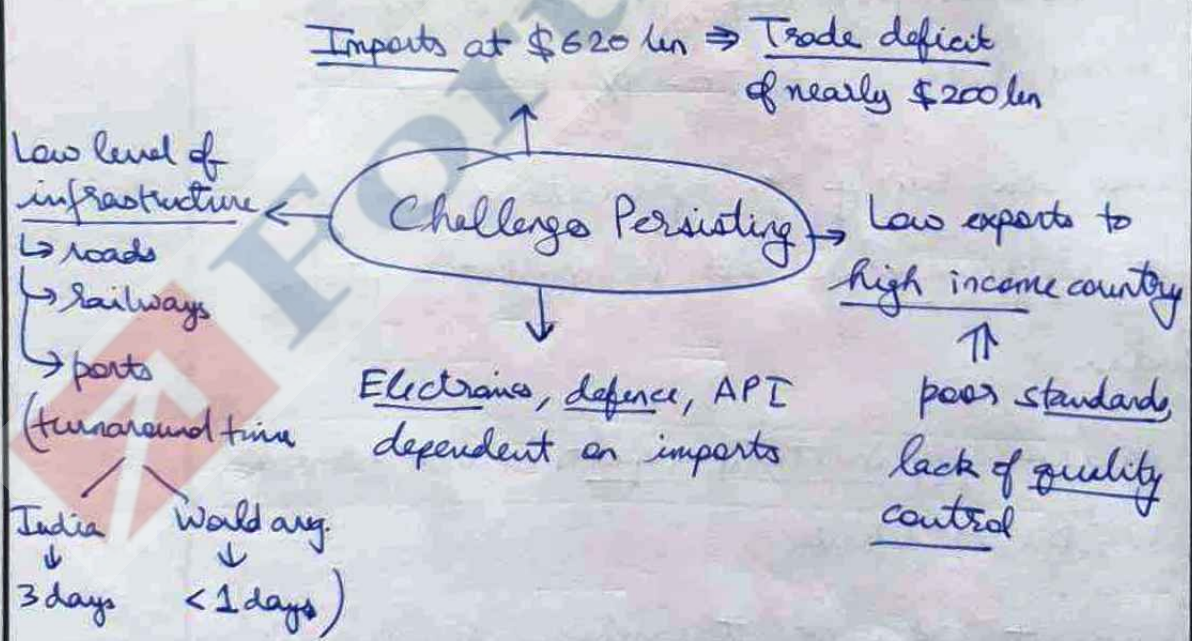
In FY 2021-22, India achieved an unprecedented feat of merchandise export of \$ 420 billion for the 1st time.

### Factor Responsible

1. High global commodity prices led to rise in value of equivalent quantity  
e.g. petroleum products, top item of exports, were trading at 20-30% higher
2. Decrease in supply of agricultural products due to Ukraine war led to market capture by India  
2.1 Indian agricultural exports alone reached USD 50 billion
3. Government steps to streamline supply chain through Turant customs portal, faster clearances, etc.



4. PLI schemes launched for electronics, textiles, food processing
5. Support to MSMEs extended during Covid such as ECLGS, Rozgar Pratsahan Yojana led to resilience post-Covid
6. Export promotion initiatives like RoDTEP, NIRVIK (cheaper capital), PCFC, ECGC, etc
7. Zero-rated exports under GST along with automated refunds of IGST for exporters



Measures to Integrate Into Global Value Chains (GVC)

1. Lower import tariffs because GVCs need to cross national border multiple times (e.g. semi-conductors)
2. Entering into strategic FTAs and regional trade agreements like RCEP, TPP, etc.
  - 2.1 Ensure strong rules of origin clause
  - 2.2 Incorporate "offset clause" to promote domestic industry
  - 2.3 "Sunset clause" as in NAFTA
3. Graduate from Assemble in India to Make in India in case of electronics (Economic Survey)
4. Promote reforms at level of states
  - land availability
  - power
  - labour laws
  - contract enforcement

To ensure India is hub of GVCs need to further push FTAs as VAECEPA and Australia along with PLI schemes, SemiCon India Program (₹76000 crore), etc.

**Feedback**  
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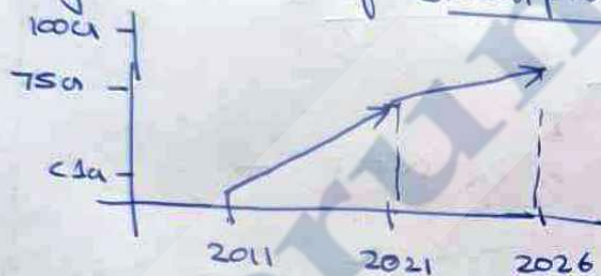
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Q.12) Fintech is facilitating financial inclusions through innovations, but reaping its developmental potential requires overcoming critical hurdles. Analyze. (15 marks, 250 words)

फिनटेक नवाचारों के माध्यम से वित्तीय समावेशन की सुविधा प्रदान कर रहा है, लेकिन इसकी विकास क्षमता का लाभ उठाने के लिए महत्वपूर्ण बाधाओं को दूर करने की आवश्यकता है। विश्लेषण कीजिए। (15 अंक, 250 शब्द)

In 2011, World Bank had predicted India would take 50 years to achieve 80% Indians with bank accounts. India did it in 7 years due to fintech's immense potential such as:

1. Jan Dhan - Aadhar - Mobile Trinity
2. Rising number of smartphone users



3. Increased penetration of 3G, 4G along with Bharat Net, UPI

Fintech → Financial Inclusion and Development

1. Mobilize savings of poor and promote capital formation

Ex: Average balance of 10 crore Jan Dhan accounts rising to ₹ 2600

2. Reduce leakages in government subsidy  
e.g. DBT, PM-KISAN, PM FBY, etc
3. Better tracking of beneficiaries for policy making  
e.g. Covid transfers into women Jan Dhan
4. Innovative products launched like cash-flow  
based finance for SMEs, car usage based  
insurance policies, etc.
5. Reduce vulnerability of poor to Ponzi schemes  
and promote savings habit in bank accounts

### Critical Hurdles

1. Low level of digital, financial and general  
literacy ( $\rightarrow$  4% literacy level  $\rightarrow$  Census 2011)
2. People feel cash is more intuitive and  
easy to use
3. Cybersecurity and privacy concerns  
e.g. identity theft, OTP fraud, data breach at  
Big Basket

4. Digital divide prevents fintech from reaching rural areas, elderly, women, etc

5. Lack of regulation on data collection, storage, etc

6. Focus of fintech on urban middle class

Overcoming Hurdles

1. Data protection law
2. Digital Didi to handhold the poor to use fintech products
3. Sensitisation & awareness on cybersecurity along with strong institutional mechanism

Only a multi-pronged approach can help India achieve true potential of fintech such as RBI Policy to Promote Digital Banking Units, etc.

Feedback  
(For OFFICE use)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total

Q.13) The fundamental problem in agriculture is not the availability of resources, but their inefficient use. Comment. (15 marks, 250 words)

कृषि में मूलभूत समस्या संसाधनों की उपलब्धता नहीं, बल्कि उनका अकुशल उपयोग है। टिप्पणी कीजिए।

(15 अंक, 250 शब्द)

Agriculture in India employs 49% of its workforce but adds only 16% to its GDP highlighting the inefficient use of resource in agriculture.

### Problem of Inefficient Use

1. Power subsidy has led to intensive rice cultivation in Punjab & Haryana which are drier regions.

↳ led to 0.3 m groundwater depletion per year (CGWB)

2. Fertilizer subsidy especially on Urea (fixed MRP basis) led to imbalanced use of

N : P : K = 6 : 7 : 2 : 4 : 1

↳ led to higher fiscal deficit

↳ poor soil quality

### 3. MSP policy and its politicization

↳ Wheat and rice overstocking at FCI

↳ India deficient in pulses, oilseeds, millets

### 4. Poor storage infrastructure

(Warehouse stock per capita      India      |      US)

0.02 sq. m      |      4.4 sq. m



Farmers vulnerable to cob-web phenomenon



Price volatility of tomato, onion, pulses, etc

### 5. Problem of stubble burning and air quality in Delhi due to cereal-intensive agriculture

### 6. Surplus labour ⇒ low mechanization

India: 30%      Brazil: 75%

⇓

disguised unemployment, low average farmer income  
(₹1600 per month)

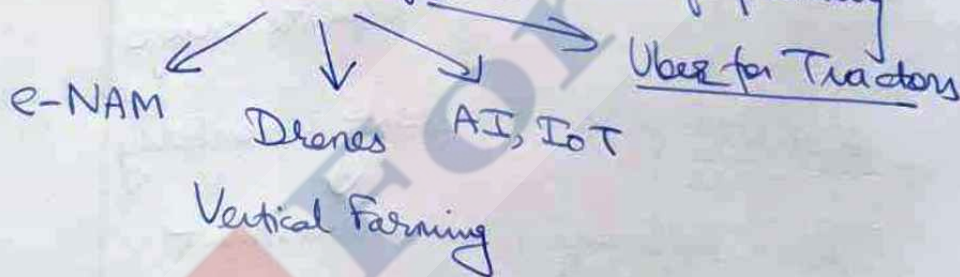
### Beyond Insufficient Usage

1. Poor marketing infrastructure ⇒ low farmer prices

2. Lack of focus on high-value crops
3. Low expenditure on R&D (0.7% of GDP)
4. 86% farmers own less than 2 hectares of land

Way Forward

1. Rationalise subsidy outgo based on farm size, only ~~an~~ direct subsidy (Shanta Kumar panel)
2. Limit MSP-based procurement to SMF
3. Diversify farm & non-farm activities (Ashok Dalwai panel)
4. Use of technology for aid of farming



Through schemes like PM Kisan, Pradhan Mantri Krishi Sinchayee Yojana, Agriculture Infrastructure Fund, FPOs, Contract farming the government is making right steps to ensure efficient use of limited resources of agriculture.

**Feedback**

(For OFFICE use only)

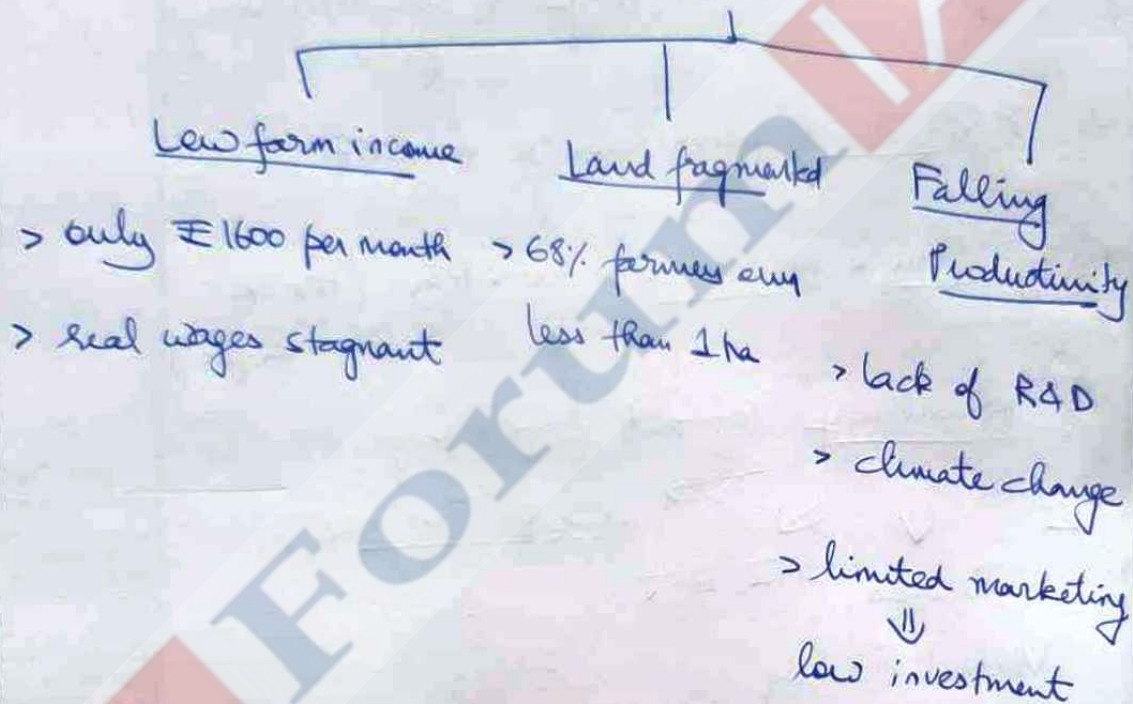
Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



Q.14) Encouraging livestock through mixed farming can be the answer to the triple burden of low farm income, increasing land fragmentation and plummeting productivity in the agriculture sector. Discuss. (15 marks, 250 words)

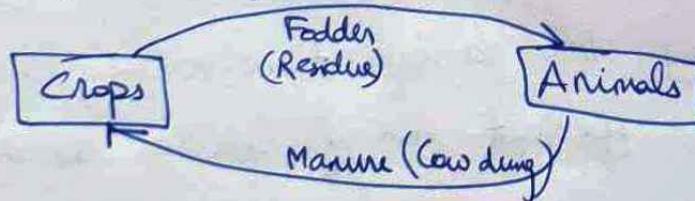
मिश्रित खेती के माध्यम से पशुधन को प्रोत्साहित करना कृषि क्षेत्र में कम कृषि आय, भूमि विखंडन में वृद्धि और उत्पादकता में गिरावट के तिहरे बोझ का जवाब हो सकता है। चर्चा कीजिए। (15 अंक, 250 शब्द)

As pointed out by Ashok Dalwai report on doubling farmers income, use of livestock is crucial to reduce the triple burden



### Benefits of Mixed Farming

1. Efficient Use of resources



2. Liquidity to farmer through regular sale of animal produce
3. Increase nutrition levels (protein, fat, etc)
  - ⇓
  - Raise productivity
4. Livestock as collateral for farm loans
  - ⇓
  - Raise investment cycle.
5. Enables higher value addition
  - Milk → Better
  - Khoya
  - Cheese
  - Fishes → Cold chain
  - Marine processing
6. Limited space required by livestock
  - ⇓
  - No issue even if fragmented land

### Challenges of Mixed Farming

1. Higher labour requirement
2. Veterinary services not well-developed
3. Limited cold chain infrastructure

4. Artificial insemination, <sup>(AI)</sup> not available
5. Limited marketing avenues for animal produce

Through schemes like Rashtriya Gokul Mission, PM Matsya Sampada Yojana, target to raise AI to 70% (25% in 2020) by 2025, elimination of foot & mouth disease, PRIME-Products from Indigenous Cow (PIC), etc. the right steps are being taken to ~~stabilize~~ alleviate the triple burden on farmer.

## Feedback

(For OFFICE use)

Structure/  
PresentationQuestion  
Interpretation

Content

Value  
Addition

Total

Q.15) New age digital technologies are creating disruptions that open fascinating opportunities and pose frightening threats. Give an account of how digital disruptive technologies are changing our lives. (15 marks, 250 words)

नए जमाने की डिजिटल प्रौद्योगिकियां व्यवधान पैदा कर रही हैं जो आकर्षक अवसरों को खोलती हैं और भयावह खतरे पैदा करती हैं। डिजिटल डिसरप्टिव प्रौद्योगिकियां हमारे जीवन को कैसे बदल रही हैं, उनका लेखा-जोखा दीजिए।

(15 अंक, 250 शब्द)

Digital disruptive technologies, <sup>(DDT)</sup> include Artificial Intelligence, Internet of Things, Extended Reality, Metaverse, Cryptocurrency, etc. that are changing the way we live.

## DDT Changing Our Lives

### 1. Artificial Intelligence

- 1.1 Personal assistants like Siri, Alexa, etc. enable to set alarms, make calls, shopping, etc.
- 1.2 Chatbots like NPCI's Pai enable better delivery of public services to citizens
- 1.3 Autonomous vehicles can help reduce the 1.5 lakh deaths on Indian roads every year

### 2. Drones

- 2.1 Commonly used for photography at weddings

2.2 Used by law enforcement agencies for crowd management, delivery of vaccines

### 3. Extended Reality

3.1 Used to experience home decor before shipping

3.2 By Sunglasses manufacturers

### 4. Cryptocurrency

4.1 Used for anonymous, low-cost remittances by El Salvador's migrants

4.2 Non-Fungible Tokens (NFT) for digital artwork

### 5. Blockchain

5.1 Used by SBI for banking services

### 6. Quantum Computing

6.1 For faster computation, R&D, simulation, etc.

7. 5G → remote surgeries, holographic presence, cloud computing

## Threats from DDT

1. Cybersecurity concerns e.g. phishing, spamming, data theft
2. Violation of privacy due to absence of proper data regulations
3. Digital divide → inaccessible to poor
4. Used for terror funding, money laundering, arms smuggling, etc (FATF report)
5. Drone based IED delivery at AFS Jammu threatens national security
6. AI → algorithmic bias (e.g. against Blacks by US Police software)  
 ↓  
 Successor systems to take over humans

As with any technology DDTs need to be used in properly regulated way so that threats are minimised and opportunities are maximised.

### Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total

Q.16) Nanotechnology is an inter-disciplinary and inter-connected science that has revolutionary applications across sectors. In this perspective, discuss the relevance of nanotechnology for socio-economic development in the country. (15 marks, 250 words)

नैनोटेक्नोलॉजी एक अंतर-अनुशासनात्मक और परस्पर जुड़ा हुआ विज्ञान है जिसके सभी क्षेत्रों में क्रांतिकारी अनुप्रयोग हैं। इस परिप्रेक्ष्य में, देश में सामाजिक-आर्थिक विकास के लिए नैनो प्रौद्योगिकी की प्रासंगिकता पर चर्चा करें।

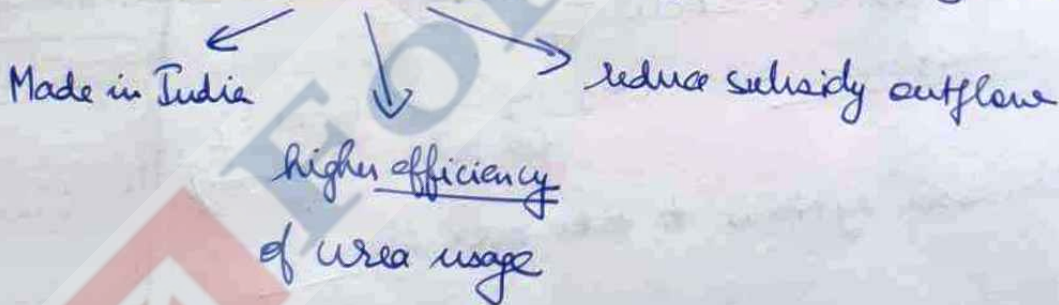
(15 अंक, 250 शब्द)

Nanotechnology refers to particles in the nano scale range (1-100 nm) that have unique physical, electrical, optical properties due to their small size.

### Relevance of Nano-technology

#### 1. Agriculture

↳ Nano Urea Liquid fertiliser by IFFCO



↳ Nano-herbicides

↳ Nano-sensors for crop optimization

#### 2. Health care

↳ Nanocapsules for targeted drug delivery

slow & sustained

3. Energy → Carbon Nano Tubes for conduction

high electrical conductivity  
high tensile strength

4. Zolites, nano membranes used for water filtration

5. Nano composites used for thin film to  
preserve food

Small dosage  
required

Overall Benefits

Low per unit cost

Low interference

with external environment

High efficiency

### Challenges

1. Potential toxicity
2. Lack of degradation ⇒ may pollute species



3. High penetrative power  $\Rightarrow$  may inhibit cell function
4. High R&D required but only India spends only 0.7% of GDP for R&D
5. Lack of trained manpower available
6. Low awareness among people

Through interventions like capital subsidy, higher seed funding for nano-tech startups, hackathons, along with confidence building among people, the nanotech sector can truly revolutionise the country.

## Feedback

(For OFFICE use)

Structure/  
PresentationQuestion  
Interpretation

Content

Value  
Addition

Total

Q.17) Making the invisible groundwater visible is critical for building climate resilience and achieving sustainable development goals. Examine.

(15 marks, 250 words)

अदृश्य भूजल को दृश्यमान बनाना जलवायु को लचीलापन बनाने और सतत विकास लक्ष्यों को प्राप्त करने के लिए महत्वपूर्ण है। परीक्षण कीजिए।

(15 अंक, 250 शब्द)

More than 20 Indian cities including Delhi & Bangalore are on the verge of running out of groundwater levels (NITI Aayog).

Issues with Groundwater, in India (9W)

1. India extracts 25% of global groundwater, highest in the world
2. 90% of GW extract for irrigation

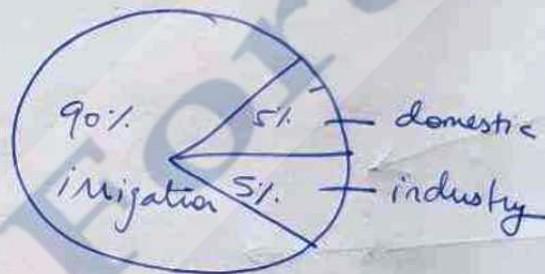


Fig: GW usage in India

3. Lack of efficient recharge
  - 3.1 Destruction of wetlands
  - 3.2 Concretization of landscape
  - 3.3 Climate change  $\Rightarrow$  short spells of intense rain  $\Rightarrow$  fail to recharge

#### 4. Subsidized over extraction of GW

↳ Power subsidy

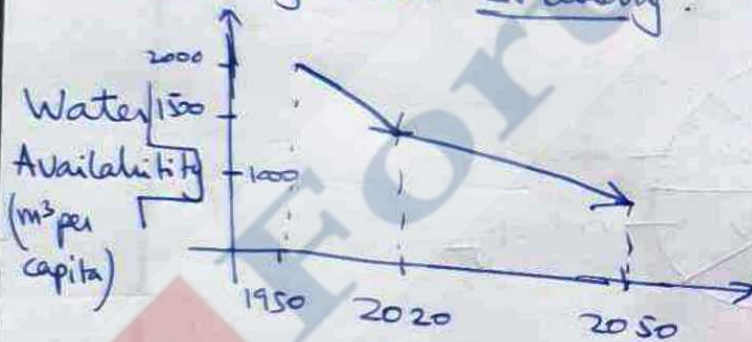
↳ Irrigation subsidy for boring, tubewells

#### 5. Rice-intensive cultivation in Punjab,

Haryana not suitable

#### 6. Limited regulation capacity of states to enforce limits on GW extraction

#### 7. Increasing population, demands of urban areas further stressing



### Building Climate Resilience

#### 1. Agriculture sector

1.1 Promote drier crops — pulses, oilseeds, millets, horticulture — in GW depleted areas

- 1.2 Gradually reduce subsidy on tubewells in ~~dp~~ overexploited zones
- 1.3 Promote efficient irrigation
  - drip
  - micro irrigation
  - watershed management
2. GW recharge
  - 2.1 Mandatory at commercial establishments
  - 2.2 Incentivise to channel rooftop water from homes
  - 2.3 Community ponds
3. Efficient use of water in urban areas
4. Afforestation
5. Restoration of wetlands

Through steps like Atal Bhujal Yojana (in collaboration with World Bank), Sol Shakti Abhiyan, CGWA, etc the right steps have been taken to ensure achievement of SDG by 2030.

**Feedback**

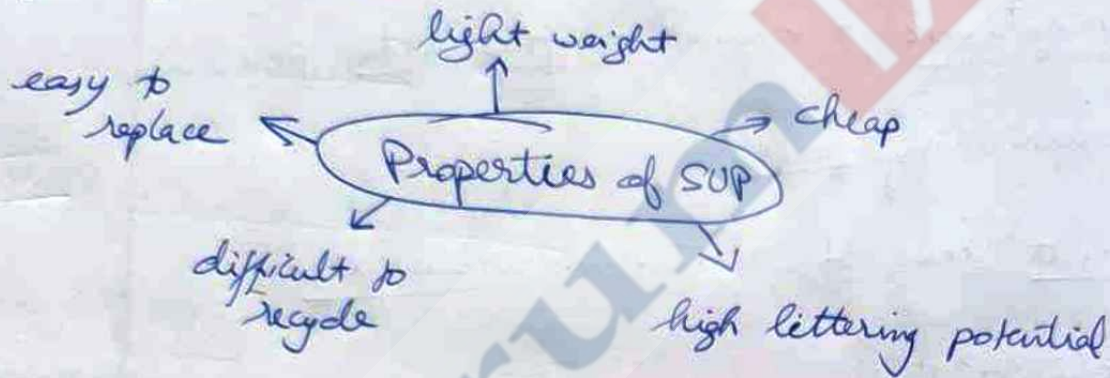
(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total

Q.18) Single use plastic (SUP) is a health, economic and environmental scourge, that requires governments to regulate, businesses to innovate and individuals to act. Examine in context of recently introduced ban on SUPs. (15 marks, 250 words)

सिंगल यूज प्लास्टिक (SUP) स्वास्थ्य, आर्थिक और पर्यावरणीय संकट है, जिसके लिए सरकारों को विनियमित करने, व्यवसायों को नवाचार करने और व्यक्तिगत रूप से कार्य करने की आवश्यकता होती है। सिंगल यूज प्लास्टिक पर हाल ही में शुरू किए गए प्रतिबंध के संदर्भ में परीक्षण करें। (15 अंक, 250 शब्द)

Single Use Plastics (SUPs) refer to plastics like wrapping films, ice-cream sticks, juice straws, etc. that are disposed after first use.



### SUP as a Scourge

#### Health

1. Can serve as aggregator of carcinogenic material
2. Form microplastics and enter food chain
3. Damage to marine life by logging

## II Economic

4. High cost to recycle or collect waste material

5. Can choke sewage drains  $\Rightarrow$  high cost of maintenance

6. Low cost of production  $\Rightarrow$  increases threat

## III Environmental

7. Can stay around for decades.

8. Destroy lakes, wetlands, etc. by forming top layer and blocking sunlight

9. Reduce aesthetic appeal of tourist places  
e.g. beaches littered with wrappers

## Steps Needed to Tackle

### I Governments to Regulate

1. India has led the world by banning SOP

2. Need to ensure enforcement of ban

3. Conducive policy environment for alternatives
4. Rice for Plastic model of Kerala

## II Businesses to Innovate

4. New business opportunity to develop alternatives like edible cutlery, jute, paper, cloth packaging
5. Startups & Hackathons may be promoted
6. Incubation centres, R&D fund, etc. are needed

## III Individuals to Act

7. Reduce and re-use SUP already purchased
8. Reject products that contain banned SUP
9. Recycle of plastic waste at home, office, public places, etc.
10. Use glass bottles instead of packaged drinking water

Through a concerted effort along with tech like "~~Plastic~~ conversion into Ethanol" the scourge of SUP can be challenged

Q.19) In what ways management of maritime borders differ from that of territorial borders? Also, analyze various vulnerabilities that arise from a large maritime boundary of the country.

(15 marks, 250 words)

समुद्री सीमाओं का प्रबंधन किस प्रकार क्षेत्रीय सीमाओं से भिन्न है? इसके अलावा, देश की लंबी समुद्री सीमा से उत्पन्न होने वाली विभिन्न सुमेदताओं का विश्लेषण करें।

(15 अंक, 250 शब्द)

India is blessed with 15000 km of ~~the~~ land/territorial border along with 7500 km of maritime borders.

### Management Differences

#### Maritime Border

1. Settled border, no dispute
2. Fishermen issue is a major challenge
3. Cannot be fenced
4. Choppy waters
5. Need equipment - fishing vessels to cross/infiltrate
6. Guarded by Indian Navy  
↓  
Coast Guard

#### Territorial Border

1. Unsettled border
  - ↳ LAC with China
  - ↳ LOC with Pakistan
  - ↳ Nepal issue at Kalapani
2. Difficult terrain is a challenge
3. Can be fenced <sup>(wires)</sup> <sub>(laser fencing)</sub>
4. Inclement weather (Ladakh - high altitude)
5. No specific equipment needed
6. Various border guarding forces, Indian Army



## Vulnerabilities due to Large Maritime Border

1. Threats of infiltration e.g. 26/11 attacks
2. Multiple states are involved  
↓  
Lack of coordination between  
Coast Guard & State Patrol Units
3. Minor ports are unguarded while major ports secured by CISF
4. Fishing vessels do not have AIS transponder (only 40% have (Navy report))
5. Threats of piracy, smuggling, human trafficking, etc.
6. PLA Navy stationed at Hambantota (Sri Lanka)
7. limited capacity and training of state patrol units

Steps Taken

1. N3CI for Coordinated Command & Control
2. IMAC (Information Management & Analysis) at Guvaon
3. National Maritime Domain Awareness Centre
4. Bilateral and multilateral naval exercises (e.g. SLINEX, Malabar, etc.)
5. GSAT 7A for use by Navy

Way Forward

1. Over the Horizon targeting & surveillance by Maritime Patrol Aircraft
2. Capacity building of State patrols
3. Mandatory ID for fishermen
4. Net security provider concept  
Through SAGAR doctrine and better infrastructure, India's large maritime border can be utilized as an asset for the country

**Feedback**

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total

Q.20) Cyberthreats can wage a dual war on the state and citizens, disrupting the national security as well as social stability. Explain. (15 marks, 250 words)

साइबर धमकी राज्य और नागरिकों पर दोहरा युद्ध छेड़ सकती है, जिससे राष्ट्रीय सुरक्षा और सामाजिक स्थिरता बाधित हो सकती है। व्याख्या कीजिए। (15 अंक, 250 शब्द)

The recent Mumbai power outage amidst clash with China at LAG points to the dual threats of cyber domain also known as 5<sup>th</sup> frontier of war.

### Cyberthreats disruption to National Security

1. Attacks on critical infrastructure such as airports, stock exchange, power plant, etc.  
e.g. DTrack on Kudankulam N-plant (2019)
2. Steal sensitive defense establishment information — locations, blueprints, etc.  
e.g. Attacks on DRDO websites
3. Used during war to reduce adversary capability

e.g. By Russian hackers a Ukraine government website (2022)

4. To snoop on important public functionaries

e.g. Pegasus, Hermit

Shenhua (China) revealed during 2021

5. Destabilise democracy e.g. Cambridge Analytica

Cyber threats Affecting Social Stability

1. Spread of fake news to cause nation-wide uproar e.g. PMO India Twitter handle hacked

2. Use of hate speech to spark communal tensions on social media

e.g. cross-border presence of accounts used during anti-CAA protests

3. Used for recruitment of terrorists, spreading propaganda, etc.

e.g. Mehdi Khan (Kerala - ISIS links)

## Ways to Tackle

1. Implement Cybersecurity Policy 2013

1.1 Training of 5 lakh ~~per~~ personnel

1.2 Mobilization of funds

2. Develop counter-offensive capacity

because attack is the best defense in war

3. Involve private sector for RFD, in fea  
least, etc

Only through right interventions  
like CERT-IN, Cyber bot clearing centres,  
etc. can we ward off cyber threats.

### Feedback

(For OFFICE use only)

Structure/  
Presentation

Question  
Interpretation

Content

Value  
Addition

Total

### Mentor Feedback Questions

- 1 .....
- 2 .....
- 3 .....
- 4 .....
- 5 .....

### Test Goal

- 1 .....
- 2 .....
- 3 .....

### Outcomes

- .....
- .....
- .....

### Marking Scheme

Mark	Good	Average	Below average
10 Marker	3.75 – 5.0	3.0 – 3.5	< 3.0
15 Marker	5.75 – 7.0	4.0 – 5.5	< 4.0
✓	Key / Relevant Point		
✗	Vague / Irrelevant		

\* Subject to change without prior notice.