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ForumIAS

GENERAL STUDIES

Name Of Candidate

Ayush Agrawal

Roll No.

1910091083

Date:

16/8/22

Time Allowed: Three Hours

Maximum Marks: 250

INDEX TABLE

INSTRUCTION

Q. No.	Max. Marks	Marks Obtained
1		
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Total:	250	

- Please do furnish Name, Email, Roll No and Mobile in the answer sheet.
- There are TWENTY questions printed in ENGLISH & HINDI, all questions are compulsory.
- The number of marks carried by a question/part is indicated against it.
- 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.
- 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.

Any specific messages for ForumIAS Mentors/Evaluators with respect to your copy? Write it here.

The Candidate uses a SCRIBE
for writing the Test

Evaluator's Discretion:

For Student Only

Start Time | 5:05 PM

End Time | 9:00 PM

Total Marks:

Mode Of Examination:

Online Offline

Evaluator's Discretion: 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.

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ECN CODE:

EG:

Evaluation Date:

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						
Structure						
Presentation						
Handwriting						
Content						
Attempt						

ADDITIONAL REMARKS

ForumIAS



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 अन्वोन्याश्रित और परस्पर संबंधित हैं। विश्लेषण कीजिए। (10 अंक, 150 शब्द)

Urban Unemployment is 7.5% compared to rural unemployment of 6.5%. This

Shows the paradox of rural-urban unemployment.

Problems in rural areas

- 1) Lack of non-agricultural job opportunities
- 2) High population pressure on land.
- 3) Seasonal nature of employment
- 4) Dependence of agriculture on Monsoons make agricultural employment erratic.

Problems in Urban Areas

- 1) High number of people who migrated from rural areas for job opportunities

- 2) Large distances b/w residential location and work place coupled with poor public transport.
- 3) Higher price level leading to real low wages.
- 4) More demand for skilled labour as service sector dominates.

• Connecting potential employees with employer.

• Skilled development through NSDC

• Urban employment guarantee program like MGNREGS

• Incentivising labour in so intensive industries

• Social safety Net. eg: APY



Though unemployment all across India is majorly due to lack of medium & small seized manufacturing enterprises, their solutions depend on local contexts and realities.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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)

Covid-19 pandemic and the associated lockdown resulted in a steep fall of over 7% GDP in financial year 2020-21.

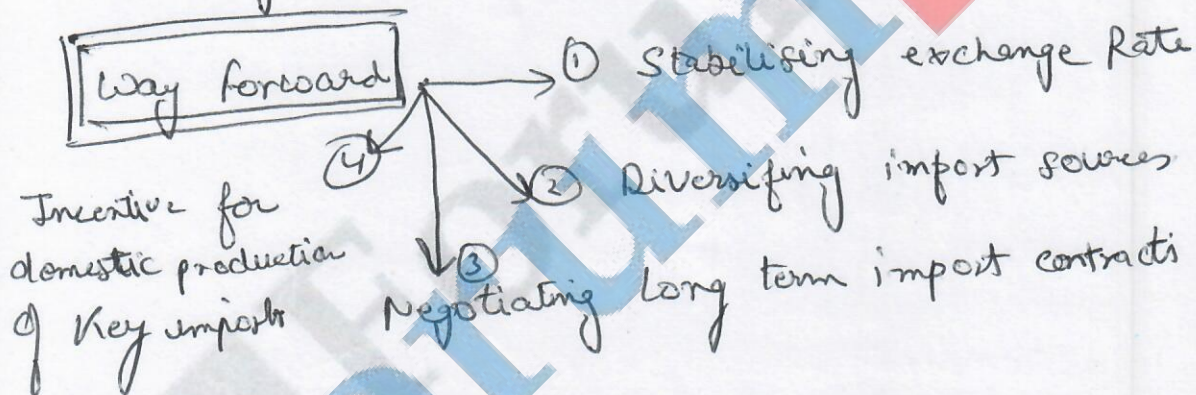
Post Pandemic Recovery Challenges

- 1) Disruption of global supply chain.
- 2) Falling demand due to fall in employment.
- 3) Lower exports due to slowing world economy and increasing protectionism.
- 4) High public debt constraining government spending.

Moreover, increasing prices of imports is leading to imported inflation fueled by Russia-Ukraine War.

Reasons for Imported Inflation

- 1) Inelastic imports like crude oil.
- 2) Restrictions on exports of oil seeds by major producing countries : 60%
of Indian edible oil is imported.
- 3) Wheat producing Russia and Ukraine leading to high food prices.



Inflation in India is mostly supply side. However monetary policy by RBI can help anchor inflationary expectations.

Feedback

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Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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

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 is the technique of agriculture that combines traditional and sustainable practices to ensure environment sustainability & climate resilience.

Features of Natural Farming

- ① Minimal use of chemical fertilizers and pesticides.
- ② Zero tillage to conserve soil moisture.
- ③ Fertigation to conserve water and increase crop yield.
- ④ Drip irrigation to reduce salinization.
- ⑤ Zero budget natural farming which uses cow urine, dung, tobacco and chillies as organic fertilizer.

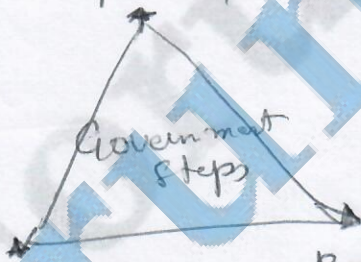
and pesticide.

Climate Resilient Agriculture

① Low green house gas emission of N_2O by reducing nitrogenous fertilizer Use.

② Conserving Ground water and reducing top soil erosion India uses 25%

of Global ground water consumption.
 Net drop more crop of PMKSY



PM-KUSUM for solar pumps

Paramparagat Krishi Vikas Yojna

Natural farming has been emerging as a good alternative to high cost inputs based farming. It must be promoted through

increased demonstration campaigns, campaigns, Lagra DBT benefits and IEC Campaigns

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
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 is the process through which any edible raw material undergoes physical-chemical-biological change. To enhance some edible characteristics.

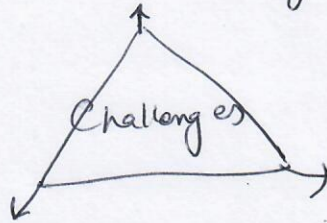
Importance of SPI

- ① It forms around 8% of manufacturing and agricultural GVA.
- ② It directly & indirectly employs around 5 lakh people.
- ③ Increases value realisation for farmers.
- ④ Has large backward and forward linkages.

5) Help reduce food wastage which stands at around 15-20%.

However the sector faces several challenges.

- Not allowed to buy directly from farmers.



- Stringent rules for contract farming

- Poor access to modern technologies.

Government Steps

- 1) PM-FME : Formalization of micro, food processing enterprises
- 2) Emergency Credit Guaranteed line for MSMEs
- 3) Encouraging co-operative farming through forming FPOs.

Food processing industry is a sunrise industry which promises to be a game changer for agriculture and employment.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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)

Space based technologies refer to those technologies that use assets deployed in the space to enhance services.

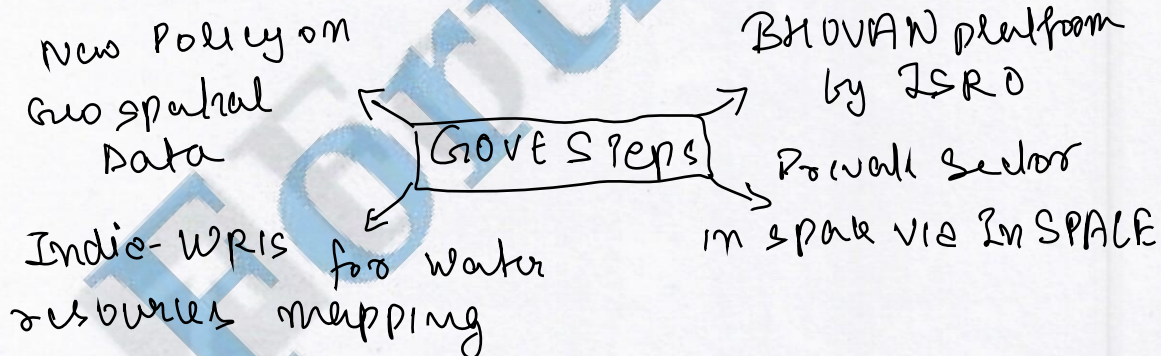
ROLE IN MONITORING DEVELOPMENT

- ① Space based Imaging can help monitor highway & border fencing projects.
- ② It can help in planning development of networks like Railways, Telecom, Roads, etc.
- ③ Natural resources monitoring using geo spatial imaging like

Hyperspectral imaging, etc.

ROLE IN DEVELOPMENT

- ① Space is \$440 Bn industry globally & India accounts for 2.2%.
- ② Satellite based internet connectivity can provide for services to Remote Areas.
- ③ Broadcasting has helped increase education quality. Eg, SITE program of Vikram Sarabhai



Space Based technologies promise to drive economic growth in times to come with increased private sector participation and lowering costs.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
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)

FCEVs use Hydrogen & Oxygen to produce electricity and water, for powering the motors, while BEVs use energy stored in Chemical batteries to power the vehicles.

ADVANTAGES OF E-VEHICLES

- ① Zero Emissions, especially FCEVs which use Green Hydrogen.
- ② They have longer durability due to less number of moving parts.
- ③ Save Foreign Exchange spent on high price crude oil \Rightarrow India imports almost 80% of its requirement.
- ④ Boost to automobile sector employment.

Lowering Crs? to 5% on E-Vehicles

Faster Adoption & Manufacturing of

E-Vehicles Phase I & II

National Green Hydrogen Mission



Lower Registration fees by State Govt.

MEASURES NEEDED

- ① Long term contracts with Lithium Tough contracts for lithium supply.
- ② Implementing PLI scheme on Advanced Chemical Cell Batteries.
- ③ Higher investment in FCEV technology
- ④ Including larger discounts for purchase of EVs under new Scrapping Policy

E-vehicles are the future of mobility and with this in mind Govt has targeted 30% fleet to be Electric by 2030.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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 2% richest people in world
emit double the CO₂ as the bottom
50% combined.

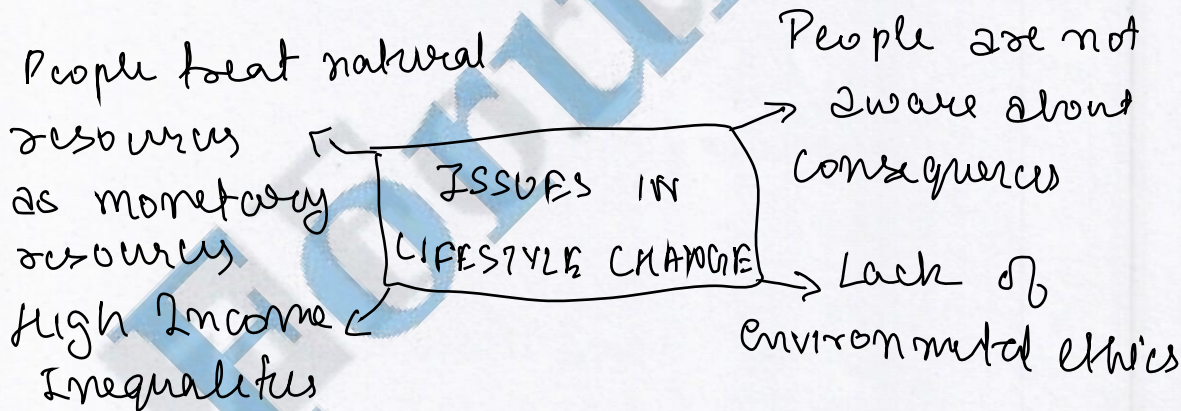
ROLE OF SUSTAINABLE PRODUCTION

- ① It can reduce energy intensity of GDP. India has pledged reducing it by 45% by 2030.
- ② It reduces cost of production & makes it accessible to marginalised.
- ③ Technologies like Zero Liquid Discharge can reduce water pollution.

ROLE OF SUSTAINABLE CONSUMPTION

At individual level, lifestyle changes can help reduce environmental degradation.

- ① Reducing wastage of food and switching to vegetarian diet can reduce GHGs.
- ② Ensuring no electricity is wasted by taking care from Earth Hour everyday.
- ③ Giving up consumption of highly energy intensive goods & services like Cryptocurrencies.
- ④ Using biodegradable packaging instead of plastics for soil fertility.



Sustainable lifestyles is the key to sustainable environment. It can be encouraged through concerted IEC Campaigns.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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)

Disaster Management is the process through which impacts of disasters are managed and curtailed through balanced mitigation & adaptation measures.

MANAGING RISKS RATHER THAN IMPACTS

- ① It is often said that prevention is better than cure.
- ② Every rupee spent in mitigation can save ₹ 3-5 on post disaster relief & rehabilitation.

FLOOD RISK PROFILE OF INDIA

- ① Reshorya Barh Aayog estimates that 40 mn hectare (12%) of India's land is prone to floods.

② Kosi & Brahmaputra rivers carry high silt and are responsible sources of Bihar & North East.

③ Over 70% of annual rainfall is received during monsoons ⇒ Floods

Large dams are used for controlling floods

CWC issues flood warnings

Checkdams are built across rivers

Pre Monsoon Desiltation of Basins

PREPAREDNESS

NDMA GUIDELINES

- ① De-encroachment campaigns from riverbeds
- ② Proper & adequate shelter places.
- ③ Safety from epidemics like Malaria.

Floods in India are responsible for 20% casualties of worldwide floods. It is recurring in nature & need to be managed comprehensively.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
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)

Agnipath scheme is a Tone of Duty scheme for internship of 3 years in all 3 armed forces for new recruits.

FEATURES

- ① 25% of Agniveers will be selected for permanent commission
- ② Agniveers will receive a Basic and monthly salary with NO Income Tax
- ③ A lump sum of amount ₹ 11 lakh will be payable at the end of 3 years.
- ④ 10% reservation for Agniveers in CAFPS

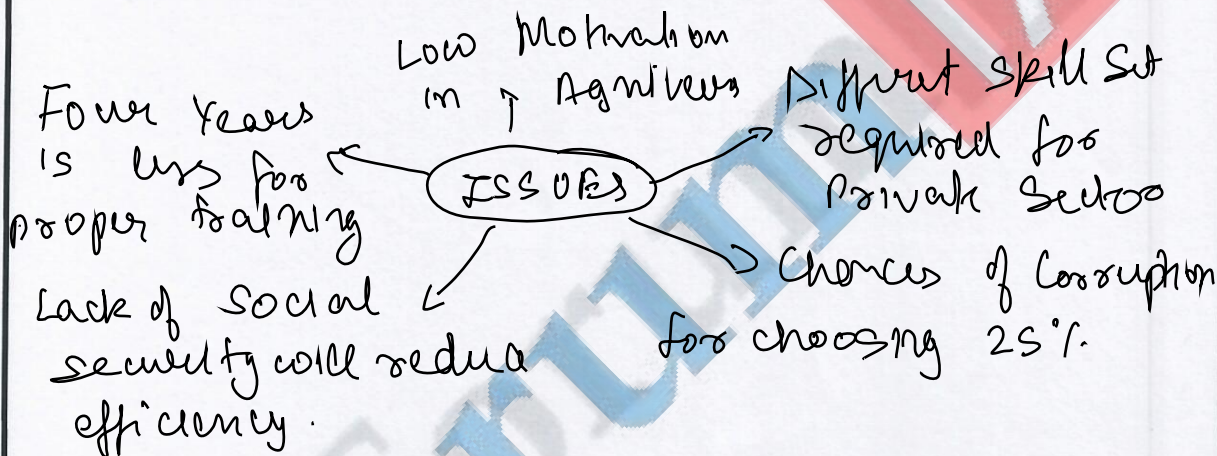
BENEFITS OF AGNIPATH

- ① Younger Armed force: Average age of Indian Soldier is 32 compared to 26 globally

② New & young recruits will have new age skill set.

③ Save expenditure on pensions which can be used for Capital Procurements.

④ Trained, disciplined pool of young people for business & nation building.



Agnipath is a step in the right direction for building an armed force capable to tackle a Two front war spread across cyber & space domains. It only needs fine tuning through full fledged pilot for 8 years.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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 is set of criminal activities conducted by an organised group of 3 or more with a clear objective and without any hierarchy. It includes Drug & human trafficking.

TECHNOLOGICAL ADVANCEMENTS

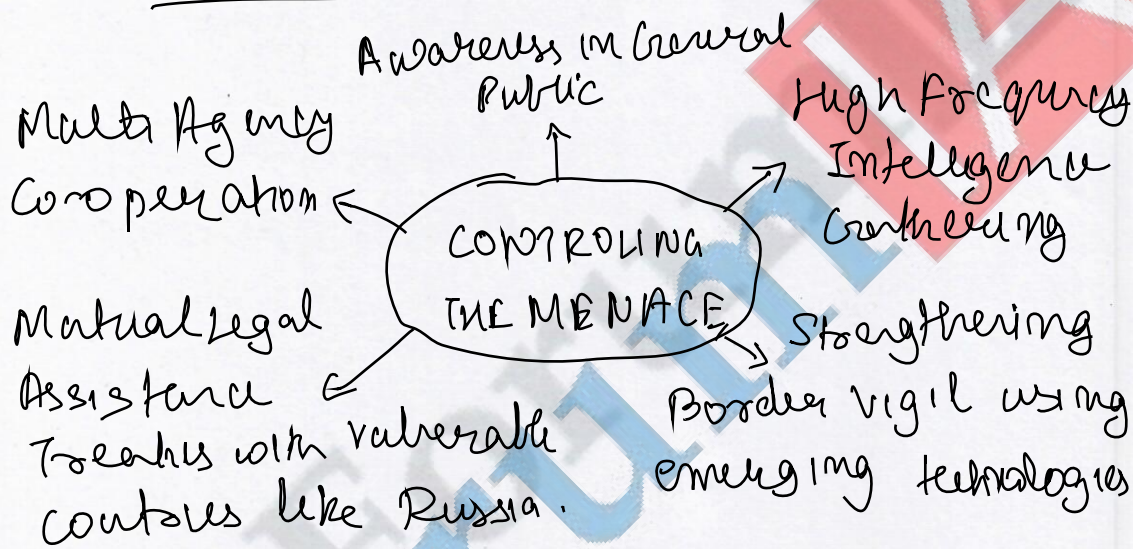
Role in Expansion

- ① Reach more potential customers using darknet. Eg, Sex Rackets
- ② Medical Technology has made it possible for remote organ cultivation which increases human trafficking.
- ③ Drone Technology has increased the physical reach of Organized Crime.

Role in Diversification

① Financial Frauds has emerged as a new organised crime which happens through online channels & phishing.

② Online Radicalisation & Recruitment through social media.



Organised crime has been growing in forms as well as depth of its reach. Intelligence agencies will do well to maintain vigilance in cyberspace to gain an upper hand.

Feedback
(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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 श्रृंखलाओं के केंद्र में रखने के लिए आप क्या उपाय सुझाएंगे? (15 अंक, 250 शब्द)

Merchandise exports that include the exports of goods and commodities touched 400 billion dollar in FY-22. Due to high demand in developed countries and concerted government efforts

Sectors for high exports

- ① Gradual depreciation of INR viz-a-viz dollar making Indian exports competitive.
- ② Expansionary monetary policy followed in developed countries leading to high demand for Indian exports.
- ③ Increase in agricultural exports to around dollar 45 billion.
- ④ Government support to MSME^s in form of ECLGS, which constitute 45% of exports.

5) Signing of free trade agreements by India creating an image of reliable supplier

6) Efforts of developed countries to reduce their dependence on Chinese exports

However several challenges still persist

Challenges:

- 1) Contractionary, monetary policy being now followed by rest of the world will not reduce demand for Indian exports
- 2) High cost of inputs especially imported ones are driving cost of production.
- 3) Increasing competition from countries like Bangladesh and Vietnam.

Despite these challenges following measures can ensure India's integration to global supply chain.

Measures Needed.

- ① Encouraging micro & small enterprises to scale up to medium scale enterprises.
- ② Negotiating long term export contracts with countries of European Union.
- ③ Diversifying export destination.
- ④ Concluding free trade agreements with complimentary economies like UK ; UAE and Australia.
- ⑤ Negotiating for relaxed sanitary and phytosanitary (SPS) regulations to increase agricultural exports.
- ⑥ Ensuring that real exchange rate does not appreciate.

A sustainable increase in merchandise exports requires continuous and concerted efforts and take the advantage of China + 1 ~~to~~ Strategy.

Feedback

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Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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)

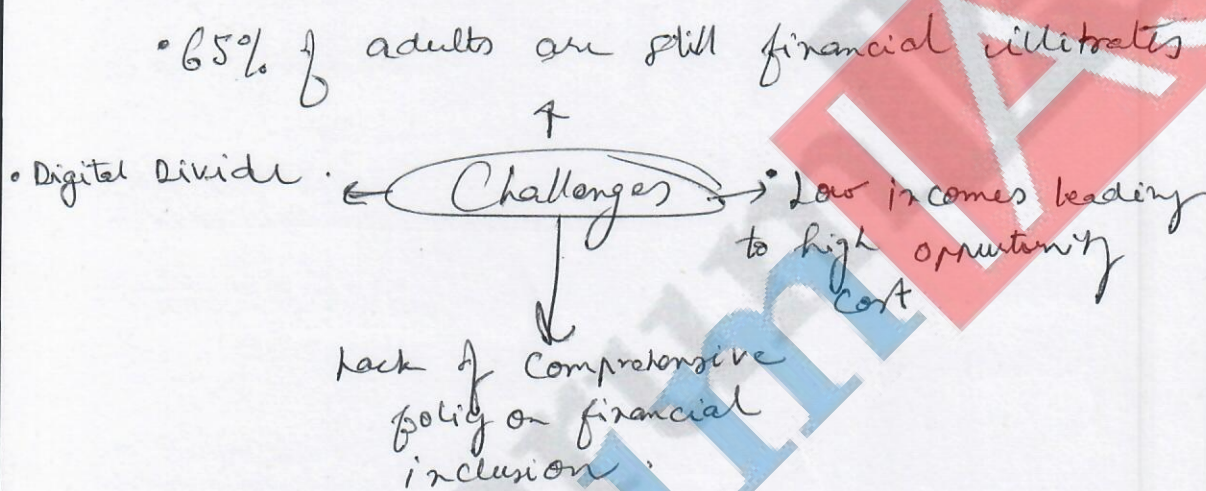
Fintech includes technologies in the financial sector that aims to generate value through faster and easier transactions as well as better investment strategies.

Financial inclusion and fintech

- ① Technologies like UPI has made digital payments available to every smart phone users.
- ② NPCI has been developing technologies RuPay to give access to debit cards to poorer sections.
- ③ DBT of subsidies under various govt. schemes like PM-KISAN.
- ④ Bank correspondants have been empowered

through e-POS machines to provide financial inclusion in remote areas -

However there are several challenges to financial inclusion:



Other challenges include:

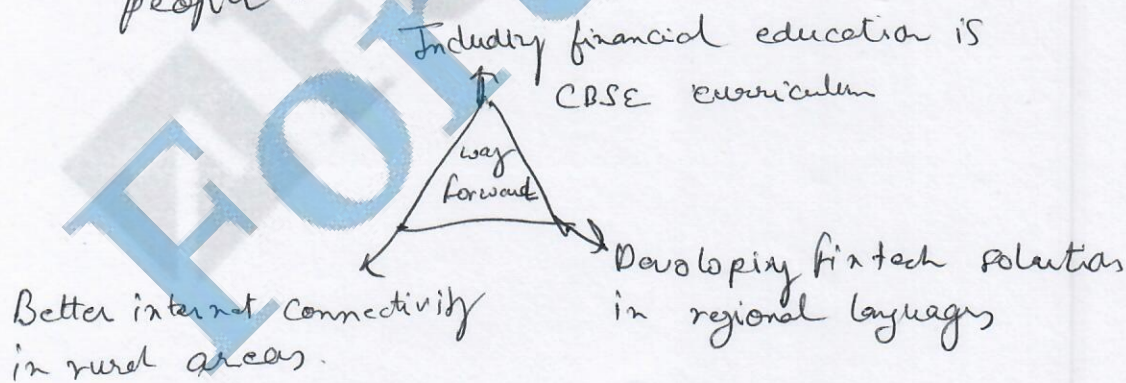
- a) Poor internet connectivity in rural areas
- b) Significant number of feature phone users.
- c) Non-Availability of Fintech applications in regional languages.

Government Steps

① National Strategy for financial education, which provides a multi pronged strategy to initiate financial education from formative years.

② RBI has come up with a financial inclusion index to ~~gauge~~ gauge the diffusion of financial technology.

③ PM Jan Dhan Yojna which gives access to banking for around 43 crore people.



Financial inclusion is the key to a Trillion Dollar digital economy and overall 5 trillion dollar economy.

Feedback

(For OFFICE use only)

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)

Indian Agriculture is a high ^{cost} ~~cost~~, low
quality & low profit business primarily
due to inefficient use of resources

Availability Of Resources

- ① India has ~~the~~ diverse agro-climatic conditions \Rightarrow diversity of crops.
- ② India has sufficient rainfall due to monsoons and very fertile soils; especially the Ganga-Bramaputra flood plains.
- ③ Perennial rivers provide constant access to irrigation water.
- ④ India consumes 55MMT of fertilizers, of which 72% is domestically produced.

This makes India second largest fertilizer uses.

④. Excess availability of cheap unskilled labour from UP & Bihar.

⑤. Technology solutions from institutions like ICAR.

Inefficient Resource Utilisation.

① Current NPK ratio in India is $\frac{9:4:1}{4:2:1}$ while ideal ratio is $\frac{4:2:1}{4:2:1}$ leading to soil degradation

② Perverse electricity subsidy leads to excessive ground water withdrawal leading to salinisation & erosion.

③ Avg. land holding has reduced from 2.3 HA in 1970, to just 1.00 HA;

in 2013-14 leading to no return economics of scale & poor mechanisation

④ Only 53% of Gross cropped area have assured irrigation despite surplus fresh water

• PM-KRISHI Sakshari Yojna and PDMC

Government Steps

• Rationalizing fertilizer subsidies and ~~in~~ new coated urea

• Agricultural investment fund of Rs 1 trillion

• Promoting co-operative farming by ~~SP~~ FPOs

Way forward.

① Promoting farm Mechanisation through leasing farm machine

② Ensuring Credit is used for agricultural purposes only

③ Promoting Horticulture & Organic Farming

The inefficient resource utilization has led to agricultural distress leading to farmer suicides. Immediate action is required.

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)

Mixed farming is the technique in which livestock rearing and crop cultivation are done on the same piece of land to increase productivity.

Features Of Mixed Farming:

- ① Growing fodder crops for livestock food.
- ② Crop rotation & intercropping to maintain soil fertility.
- ③ Using livestock products as inputs for crop cultivation eg: Bullocks ploughing.

Benefits of Mixed Farming:

- ① Increasing Farm Income.

a) Only around 25% of rural household income is from crop production.

production.

b) Livestock & Animal rearing has been growing at 18% CAGR for last 5 years.

c) India is the largest milk producer.

~~2)~~

2) Countering land fragmentation.

a) Increasing productivity of small land holding through organic fertilizers.

b) Alternate source of income in dry land areas.

3) Increasing farm productivity : Use of mixed

farming like Bee rearing can help in polination as well as Bio-control to increase farm productivity.

Government Measures

- 1) Operation flood / white revolution for increasing milk production in India
- 2) Compulsory vaccination of livestock against foot & mouth diseases to increase their productivity.
- 3) Building shelters for stray cattle.
 - Increasing the quality of fodder. → Larger size of livestock per farmer. like in New Zealand.
 - Diversifying livestock feed → Scientific breeding for better quality.

Livestock rearing and mixed farming are growing in popularity among small & marginal farmers. It promises to be a panacea for doubling farmer's income.

Feedback (For OFFICE use only)

Structure/ Presentation
Question 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)

New Age digital technologies include 5G, internet of Things, Blockchains, Artificial intelligence and the like which promises to disrupt our life in many ways.

Potential of New technologies →

1) Artificial Intelligence

It promises to personalise our purchase experience and perform computations ~~hitherto~~ hitherto impossible for humans.

eg: La. MDA of google.

2) Blockchain Technology

Cryptocurrencies have been widespread with 7% of Indians ~~currently~~ currently using it. Future property rights can be blockchain based.

3) 5G

It will provide internet speeds of over 100 times that of 4G with a very low latency and thus fuel industrial revolution 4.0.

4) Internet of Things

Every device we use from a fan to a ~~but~~ bulb will become smart and interconnect giving us remote access.

Challenges

- ① 5G requires a very high capital investment making it unviable for low density areas.
- ② Artificial Intelligence may turn into super intelligence whose consequences are still unknown.
- ③ Blockchain technology is highly energy intensive and may lead to global warming.

④ IOT

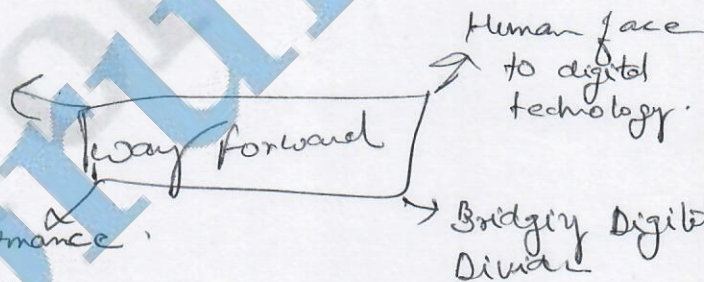
IOT may lead to a severe breach of Privacy reducing personal time.

Government Efforts:

- ① Spectrum Allocation & setting up of test bed for 5G.
- ② Centre of Excellence for blockchain by NIC.
- ③ Participating in responsible AI conference.
- ④ Narrow band IOT by BSNL.

Ethical training to Engineers.

Use for Governance.



Digital technologies are disrupting day to day lives in both positive & ~~also~~ negative manner. The double effect must be Balanced.

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 the use of nano-scale materials (1 dimension below 100 nm) to increase efficiency and harness new applications.

Features Of Nanotech:

- ① Nano-Materials has different physical, chemical & magnetic properties.
- ② High surface area to volume ratio makes them good catalyst.
- ③ Diverse materials can be used.

Applications of nanotech.

① Agricultural Sector.

a) high fertilizer use efficiency: \square nano-urea has an efficiency of over 50% compared to 30% of traditional urea.

b) Increasing crop yield and lowering cost of inputs

2) Industrial Application

a) Stronger & lighter material for aero-space
eg: nano-composites.

b) Catalyst for pharmaceutical industries

c) Good adsorbents for chemical industries

d) Sound absorbing thin films.

e) Electronics with very high energy efficiency.

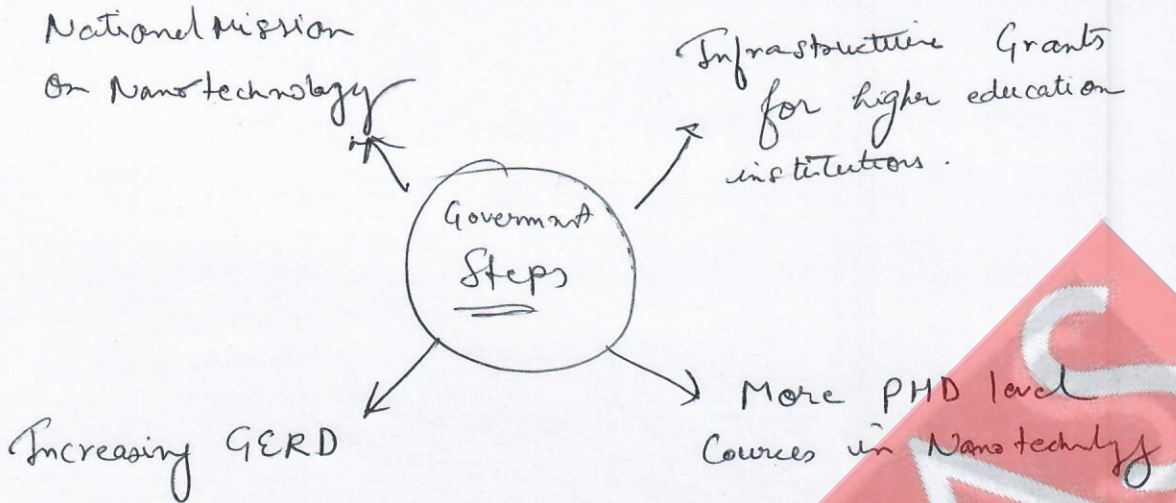
Relevance for Socio-Economic Development

1) Increased income for small & marginal farmers.

2) Provide employment to highly skilled researchers in field of nano-tech.

3) Creating technology solutions for untreatable diseases like targeted cancer therapy.

4) India can provide skilled work-force to the rest of the world.



Way forward

- 1) Industry - Academia linkage to ensure innovation in nano-technology
- 2) Stronger intellectual property regime.
- 3) Public investment in research & development
- 4) Incentivising start-ups in nano-technology field

Nano-technology promises to bring resource efficiency & open up new avenues for science & technology application

Feedback

(For OFFICE use only)

Structure/ Presentation
Question 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)

India is the largest ground water reser in the world with the share of 25% of which 9% is used in agriculture

Ground water exploitation

- 1) Over 40% of ~~water~~ aquifers in India are over exploited
- 2) Perverse electricity subsidy leads to over-exploitation of ground water by farmers.
- 3) Thermal Power Plants use over 70% of Industrial fresh water consumption.

Reasons for over exploitation

- 1) The level of ground water is not visible to the naked eye unlike ponds & lakes
- 2) Polluted surface water forces people to use ground water.  eg. river pollution.

- ③ Ground water extraction is much cheaper due to cheap drilling & motors.
- ④ Low-availability of canal irrigation.
- ⑤ No user charges for individual household.
- ⑥ Poor regulation by central ground water agencies.

Climate Resilience & Ground Water

- ① Efficient use will reduce electricity consumption & thus global warming.
- ② Conserve soil fertility and thus higher resource efficiency \Rightarrow climate resilience agriculture.

Sustainable Development

- ① Access of drinking water to the rural masses.

- ② Reduced Burden of Vector Borne diseases and cholera as well as ~~diarrhoea~~, diarrhoea

Government Steps

- ① New guidelines for groundwater extraction
- Registering all drilling rigs
 - Mandatory User charge by housing society
 - Permission for industrial Use Mandatory
- ② Atal Bujal Yojna for seven states which over exploited ground water

Ground water is a source of fresh water which needs to be conserved through rain water harvesting, building check-dams and reducing use of RO systems.

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 refers to the plastics used, which are thrown or discarded after using once & cannot be re-used.

Issues of Plastic Pollution

① Health issues

- Plastics get into food chains through cattle and fishes.
- Nano-plastics has been found in blood stream of human \rightarrow clogging

② Environmental Issues

- Plastics takes over 250 years to degrade
- They cause soil & water pollution
- Burning of plastics can spew toxic gases into atmosphere

③ Economic Impact

- a) High Cost of Recycling plastics.
- b) Plastics clog drains which needs regular cleaning.
- c) Leads to Urban flooding, damaging property.
- d) Plastic pollution is an negative externality for agriculture sector.

Government Steps

- 1) Plastic waste management rules 2016 amended in 2021 :
 - a) Banning of single use plastics from July 2022
 - b) Gradual increase in ~~minimum~~ minimum thickness of allowed plastic bags.
 - c) Extended producer responsibility.

- 2) GLO-Litter partnership for reducing marine plastic pollution
- 3) Industry Initiative for reducing plastic consumption

Way forward.

- ① Incentivising Alternatives like paper-bag production.
- ② Investing in innovative solutions for packaging, recycling & reuse
- ③ Industry must increase plastic use efficiency.

The overall success of plastic ban depends on single point regulation & effective IEC campaigns to encourage people to reduce plastic usage.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total



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 सुभेदताओं का विश्लेषण करें।

(15 अंक, 250 शब्द)

Maritime boundary refers to the coastal international boundary whereas territorial borders refers to the land boundary with other nations.

Differences

Maritime Border

a) India has over 15,000 km of maritime borders

b) It is generally with no other country

c) No diversity in physiological features

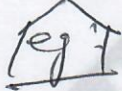
Territorial Borders

a) India has around 13,000 km of territorial boundary

b) It is invariably with other nation.

c) Diverse physiological features like mountains, deserts, plains etc.

Differences in Management

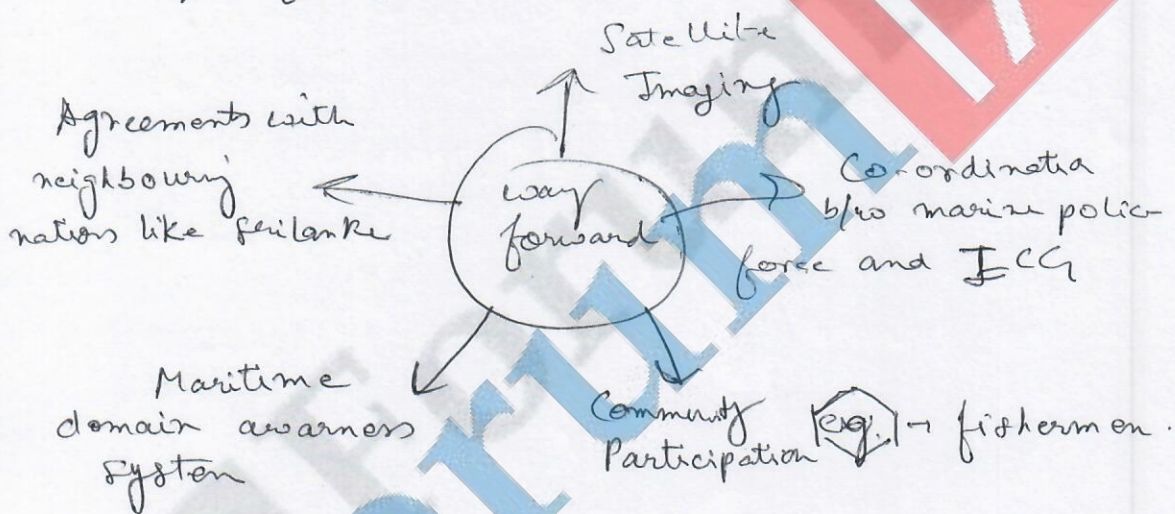
- 1) Territorial borders can be fenced whereas Maritime borders cannot be.
- 2) Different types of instruments are required for border management.  Ships for maritime and jeeps for territorial.
- 3) Maritime borders are well demarcated ~~from~~ generally owing to ~~under~~ UNCLOS while territorial borders are more disputed.
- 4) Presence of population on territorial borders is generally higher.

Vulnerability of long Maritime Borders

- ① Long stretches of Unsurveyed and Unmanned borders
- ② Shortage of human resources by as

much as 20% in Indian Coast Guard.

- 3) High terrorist infiltration.
- 4) Easy route for smuggling of drugs and pirated products.
- 5) Illegal & Over exploitative fishing by foreign vessels.



The 26/11 terror attacks are a reflection of vulnerabilities of Indian Maritime Borders. They must be well guarded & protected.

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)

Cyber threats are security threats ~~and~~ emanating from cyber space which is a complex interplay of computer resources, internet & humans.

Threats to citizens,

- ① Privacy breach and personal data leakage
- ② Cyber crimes like stalking of women & children.
- ③ Extortion of money using ransomware

Threats to Business,

- ① Loss of Reputation
- ② High cost of restoration after cyber attack

- ③ High Compliance burden & losses to ransomware
wanna-cry.

Threats to Nation

- 1) Critical Information Infrastructure like power-grids are ~~at~~ threatened. (eg) recent Chinese attack on Mumbai Power System.
- 2) Theft of Confidential & Sensitive Data from Armed forces & other government departments.
- 3) Threats to financial system which is increasingly getting digitalised (eg) Cyber attacks of Estonia in 2007 lead to stand still of its economy.
- 4) Theft of personal data of citizen can lead to social instability. (eg) Aadhaar Data leak. Recently.
- 5) Illegal access to sensitive weapon system and military satellite can lead to national security challenges.

Government efforts

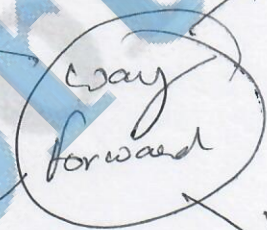
- 1) National Cyber Security Co-ordination Centre (NCCC) is as nodal agency.
- 2) National critical information infrastructure protection Centre (NCIIIPC)
- 3) Cyber Swachhta Kendra for tackling bot nets
- 4) CERT-In and CERT-Fin for defence against cyber attack

• Creating cohesion b/w different agencies.

• Regular & stringent Compliance checks of private sectors.

• Including cyber security education in ~~curriculum~~ curriculum

• Collaborating with private sector for solutions



In times of growing digitalization & emerging technologies like SA & ~~facial~~ facial recognition, & cyber security has become a key domain for security.

Feedback

(For OFFICE use only)

Structure/ Presentation
Question Interpretation
Content
Value Addition
Total