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GENERAL STUDIES (TEST CODE : 1419)

Name of Candidate	SALONI VERMA		
Medium Eng./Hindi	ENGLISH	Registration Number	746224
Center	ONLINE	Date	8.12.2020

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
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3	10	
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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।

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

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

EVALUATION INDICATORS

1. Contextual Competence
2. Content Competence
3. Language Competence
4. Introduction Competence
5. Structure - Presentation Competence
6. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

All the Best

1. Highlighting the issues associated with power discoms in India, discuss whether privatizing discoms can help in this regard. (150 words) 10

भारत में विद्युत वितरण कंपनियों (डिस्कॉम्स) से जुड़े मुद्दों पर प्रकाश डालते हुए, चर्चा कीजिए कि क्या डिस्कॉम्स के निजीकरण से इस संबंध में सहायता मिल सकती है।

The USAID scheme was introduced by ministry of Power to alleviate issues of power discoms. Seeing limited success, privatisation is being proposed.

Issues with power discoms

- 1) High Transmission costs and leakages.
- 2) Rising debt due to commercial unviability of revenue.
- 3) Uncompetitive pricing of power due to populist schemes.
- 4) Lack of robust infrastructure and manpower.

Privatisation → a solution?

YES — 1) will promote efficiency
2) will reduce state government debt burdens
3) introduce competitive pricing

NO — 1) might lead to oligopolies —
harm to consumer.
2) power → critical infrastructure →
government involvement is vital

Way Forward Atmanirbhar Bharat
Abhiyan's proposed privatisation
of DISCOMs in some states on
pilot basis and power purchase
agreements are steps in the
right direction.

2. Harnessing Smart Agriculture can potentially be a game-changer for farm productivity in India. Discuss. (150 words) 10

स्मार्ट कृषि का दोहन संभवतः भारत में कृषि उत्पादकता के लिए निर्णायक सिद्ध हो सकता है। चर्चा कीजिए।

FAO defines smart agriculture as a synergy between food productivity, farmer prosperity and climate sustainability.

Feature of smart agriculture	Game changer for India
1) reduce chemical fertiliser; promote Integrated nutrient management	1) decrease costs for farmer 2) decrease fiscal burden for government 3) reduce eutrophication
2) Crop diversification → local crops (like millets, ragi), horticulture etc.	1) nutrition security for farmer 2) export potential [Horticulture → 14% of cropped area but 33% of agriculture GVA]

3) irrigation efficiency	1) reduce salinisation 2) savings for farmer
4) use of technology	1) agri marketing → e-NAM 2) reduce corruption 3) increase employment in non-farm areas

Way Forward — Seeing the scenario:

- 1) Contribution of agriculture to GDP is 16%, to employment — 45%.
 - 2) reducing farm sizes (Agriculture Census 2015-16)
 - 3) ongoing threat of climate change
- Government schemes for smart agriculture like RKVY, RAFTAAR, promotion of FPOs, Triple Farmers Acts (2020) must be implemented judiciously.

3. Rather than focusing solely on quantity, inclusive growth concerns itself with the quality of growth. Discuss. (150 words) 10

केवल परिमाण पर ध्यान केंद्रित करने के बजाय समावेशी विकास, संवृद्धि की गुणवत्ता के साथ भी अपना सरोकार रखता है। चर्चा कीजिए।

Inclusive growth is defined as equitable, accessible and holistic growth of all sections of society (ILO).



Inclusive growth is in stark contrast to the neoliberal, economic development approach that focusses solely on quantity of growth.

- Economic development will care only about macroeconomic indicators — GDP (India is 5th largest), unemployment (6% as per PLFS).
- Inclusive growth — income inequality (1% of India's rich own ~50% of wealth), unemployment's social impact (rural women have higher Labour Force Participation than urban).

India's focus is on inclusive growth as seen in administrative ethos (Sabke Saath Sabke Vikas), constitutional mandate (Directive Principles of State Policy) and present schemes (KIRAN for women, Smart cities, Hunar Haats etc).

4. In the backdrop of Atmanirbhar Bharat, discuss the core areas crucial in export promotion for India to become a manufacturing hub.

(150 words) 10

आत्मनिर्भर भारत की पृष्ठभूमि में, भारत के लिए एक विनिर्माण केंद्र बनने हेतु निर्यात संवर्धन में महत्वपूर्ण मुख्य क्षेत्रों (कोर एरिया) की विवेचना कीजिए।

Atmanirbhar Bharat proposes a "Vocal for local" strategy to empower India as a leader in global value chains lead growth.

Core areas for export promotion

- 1) Agriculture — our share in global agricultural exports is $\sim 2\%$; potential in marine products, fruits and vegetables, GI tagged products like Kadaknath chicken.
- 2) Textiles — India is largest producer of carpets; 2nd largest in silk.
- 3) Information Technology — India is 2nd largest producer of mobile phones.
- 4) Pharmacy — India is largest producer of.

vaccines; pharmaceutical industry is
3rd largest by volume

5) Other sectors : automobiles, defence,
education, health, tourism etc.

Becoming a manufacturing hub

Division → integrating assemble
in India with make in India

2) Reforms — Labour Codes (2020),
improving ease of Doing Business
(latest rank : 63/190) etc.

3) Government measures : Defence Industrial
corridors, Special Economic Zones,
National Infrastructure Manufacturing
Zones, GST, RoDTEP for exports
etc.

These shall help India
improve manufacturing and exports.

5. Arsenic pollution is becoming a severe environmental issue in India. Enumerating its various sources, discuss the consequences and measures to tackle it. (150 words) 10
- आर्सेनिक प्रदूषण भारत में एक गंभीर पर्यावरणीय मुद्दा बनता जा रहा है। इसके विभिन्न स्रोतों को सूचीबद्ध करते हुए, इसके परिणामों और इससे निपटने के उपायों पर चर्चा कीजिए।

According to the Central Ground water authority, Arsenic pollution critically plagues ground-water and river basins in India.



Sources of arsenic pollution

- 1) Natural : groundwater leaching
- 2) manmade
 - i) groundwater exploitation
 - ii) excessive use of fertilisers
 - iii) industrial effluents flowing into rivers.
 - iv) unsustainable management of electronic waste.

Consequences

- 1) poor drinking water supply
- 2) diseases - cancer, respiratory issues
- 3) poor quality of irrigation via groundwater
- 4) leading to water crisis and scarcity - against Right to life (Article 21 of constitution)

seen in places marked in Fig. 1

Measures

- 1) government schemes - Jal Teerav mission, Atal Bhujal Yojana to effectively manage groundwater
- 2) Environmental Impact Assessments of industries
- 3) Structural reforms of agriculture (Soil Health card).

Tackling arsenic contamination is critical to meet SDG 6.

6. The Green Term Ahead Market (GTAM) can invigorate the renewable energy sector in India. Evaluate. **(150 words) 10**

ग्रीन टर्म अहेड मार्केट (GTAM) भारत में नवीकरणीय ऊर्जा क्षेत्र को सुदृढ़ बना सकता है।
मूल्यांकन कीजिए।

India has pledged to develop 40% of electricity from renewable energy sources by 2030. Green Term Ahead market is an essential reform for the same.

Benefits of GTAM

- 1) facilitate private sector investment
- 2) increase share of green energy in power mix.
- 3) improve reliability of power supply; more stability.
- 4) will facilitate other measures

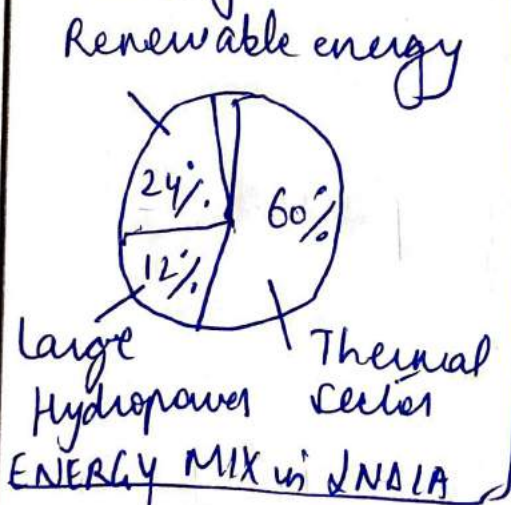
like Renewable Purchase Obligation and Renewable Energy Certificates.

Issues 1) voluntary nature of GTAM — may not be picked up by the sector.

2) needs effective regulatory environment.

Way Forward

(Fig 1)



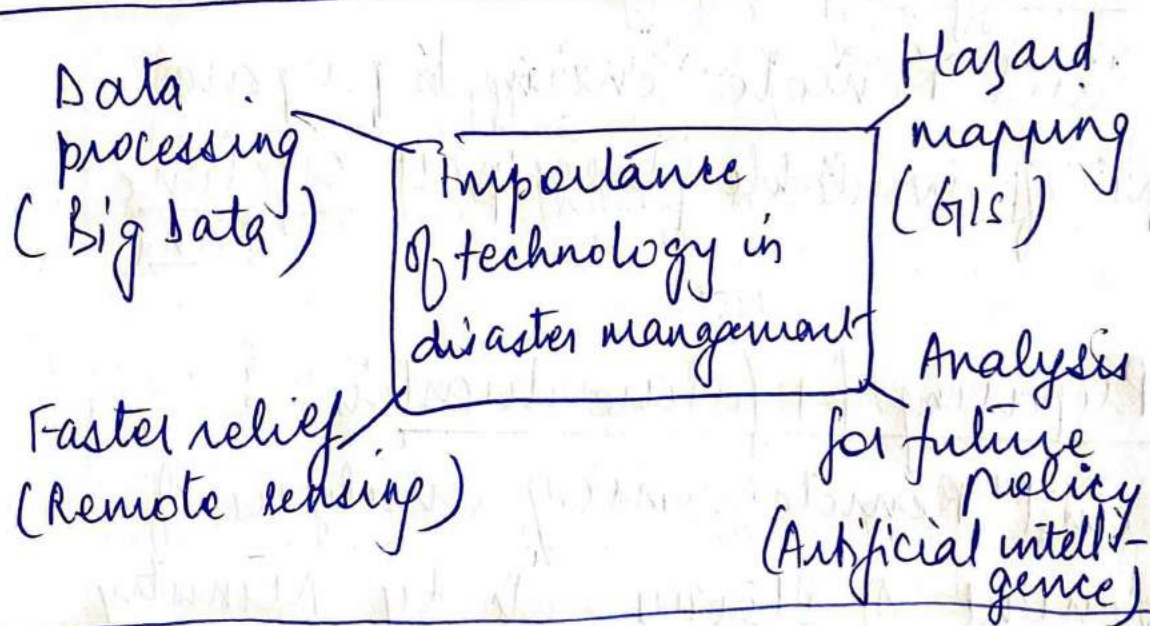
GTAM is an important reform to reduce the dominance of thermal sector in India's energy mix (Fig 1).

7. In context of the increasing importance of technology for disaster management, throw some light on the application of GIS and Remote Sensing in disaster management with specific examples from India.

(150 words) 10

आपदा प्रबंधन के लिए प्रौद्योगिकी के बढ़ते महत्व के संदर्भ में, भारत से विशिष्ट उदाहरणों को प्रस्तुत करते हुए आपदा प्रबंधन में जी.आई.एस. और सुदूर संवेदन के अनुप्रयोग पर कुछ प्रकाश डालिए।

Disaster management refers to the gamut of activities — preparation, assessment, response, rehabilitation and recovery from a disaster.



Application of GIS and Remote Sensing

1) Hazard mapping — to assess vulnerability of location. For example: Forest Survey uses GIS maps to assess

vulnerability to forest fires.

2) Targeted delivery of relief services
— For example: In Uttarakhand
cloudburst, Army and helicopters
used Remote sensing to air drop
food, medicines etc.

3) Identifying places for resettlement:
GIS and Remote sensing to prepare
maps of available places post cyclone Fani

4) Preparing for future disasters :
GIS and Remote sensing analysis of
movement of storms etc by Ministry
of Earth Sciences.

Accordingly, National
Disaster management policy (2019)

lays emphasis on technological
development for disaster risk reduction

8. The CRISPR/Cas9 genetic scissors have revolutionized the genome editing technique with applications in various areas. Discuss. (150 words) 10

क्रिस्पर/कैस9 (CRISPR/Cas9) आनुवंशिक कैंची द्वारा विभिन्न क्षेत्रों में अनुप्रयोगों के साथ जीनोम संपादन तकनीक में क्रांतिकारी परिवर्तन का संचार किया गया है। चर्चा कीजिए।

CRISPR/Cas9 are molecular scissors used in biotechnological processes like genome editing, microbiology and medical sciences.

Revolutionisation of genome editing

Double stranded
↓ DNA

↓ CRISPR/
Cas 9

Splitting of DNA

WORKING of CRISPR/
Cas 9

1) CRISPR/Cas 9 have remarkable ~~power~~ precision - they

bind to the target very specifically

2) negligible scope of error

3) Fast, easily accessible and result providing technology.

Applications

- 1) remedy for genetic diseases in humans like sickle cell ~~an~~ anaemia.
- 2) Plants and animals — cloning, synthetic production, making them pest resistant etc.
- 3) producing 'designer babies' — babies with predecided features.

However, for effective realisation of CRISPR/Cas9, concerns of ethicality, safety, genetic mutations need to be addressed.

9. Bring out the role played by Financial Action Task Force in tackling the menace of money laundering. (150 words) 10
धन-शोधन के खतरे से निपटने में वित्तीय कार्रवाई कार्य बल द्वारा निभाई गई भूमिका को स्पष्ट कीजिए।

The Financial Action Task Force (FATF) was established by the G7 in 1989 to tackle money laundering.

Money laundering : illegitimate transactions and networks of money transfer eg: round tripping

Role of FATF

1) gives blueprint for tackling money laundering eg: FOR74 guidelines

2) the 'grey and black' lists —
pulls up countries for non adherence
eg: Pakistan is in ~~the~~ grey list

3) Countries in black list are faced with downgradings in credit ratings, difficulty in accessing multilateral credit etc.

4) sustains an open platform for global, multilateral cooperation on money laundering.

5) played a crucial role in formulating the Base Erosion and Profit Shifting (BEPS) guidelines.

FATF does have some shortcomings like largely recommendatory nature. However, its usefulness is verified by the way India has used it to expose links between money laundering and terrorism.

10. Discuss the recent reforms that have been undertaken in the National Security Architecture of India.
(150 words) 10
भारत की राष्ट्रीय सुरक्षा संरचना में हाल ही में किए गए सुधारों की विवेचना कीजिए।

National Security Architecture in India is multipronged: Cabinet Committee on Security, National Security Adviser and PMO, armed forces and international cooperation.

Recent reforms

1) Creation of office of Chief of Defense Staff

2) Formation of triservices command in Andaman and Nicobar Islands

3) Ban of 101 items of defence for import

4) Announcement of defence industrial corridors in Tamil Nadu and Uttar Pradesh.

- 8) Induction of Rafale, INS Arihant
- 6) permanent commission to women in the army.
- 7) BOLD AIT, comprehensive integrated border management system etc

Evaluation of recent reforms

- 1) As the largest defence importer in the world, India is rightfully pushing for ^{defence} manufacturing in India.
- 2) Diversification of defence partnerships from Russia to Israel, France, Japan is a positive step towards strategic autonomy.

Achieving greater triservices coordination and preparing for futuristic challenges of hybrid war are the need of the hour.

11. Bring out the key hurdles that are being faced in accomplishing land reforms in India. Also, discuss the advantages which can be reaped by accomplishing them in contemporary times. (250 words) 15

भारत में भूमि सुधारों को पूरा करने में सामना की जा रही प्रमुख बाधाओं को स्पष्ट कीजिए। साथ ही, समकालीन समय में इन्हें पूरा करने से होने वाले लाभों की भी विवेचना कीजिए।

Land Reforms in India began in post independence India to achieve inclusive growth as ordained in Article 38 of the constitution.

Hurdles in land reforms

1) abolition of zamindari is one of the few unhindered reforms

2) land redistribution — hindered

by i) lack of political will

ii) nexus between land owners and administration

iii) lack of clear land titles

As a result, only 1% of land collected has been redistributed!

3) Tenancy reform — hindered by

decreasing land holdings, landowners giving out the least fertile lands etc.

4) other hurdles -

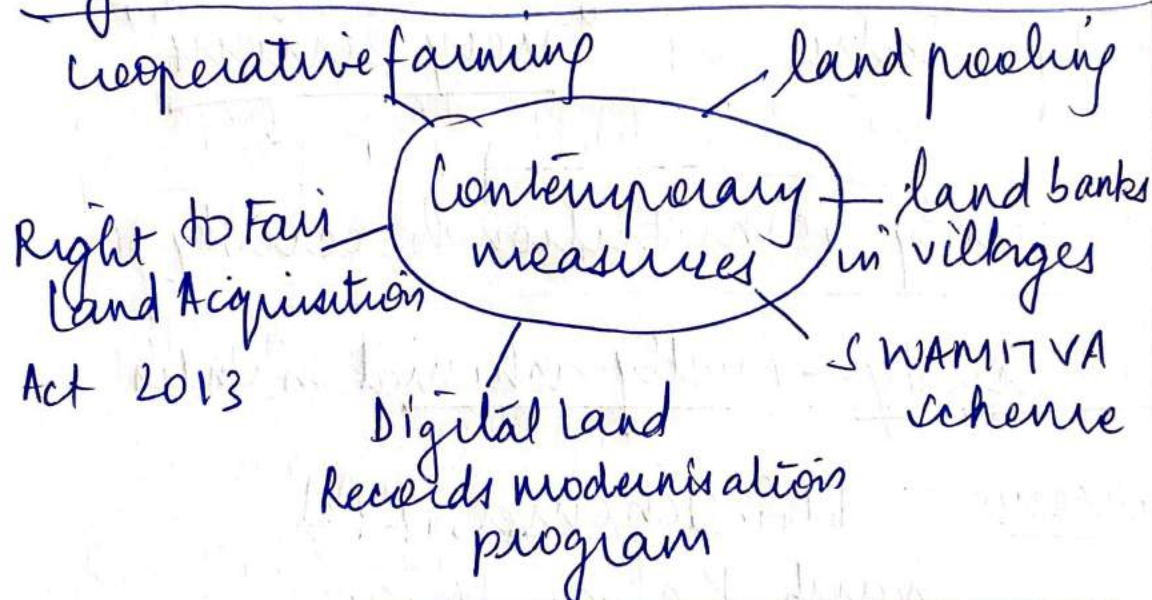
- i) caste relations in villages
- ii) fearful displacement of land-owners for development projects.

Contemporary Times — advantages by land reform:

- 1) achieving economies of scale in agriculture (80% of ~~small~~ farmers are small and marginal, they own ~40% of agricultural land)
- 2) Faster projects like PPP, HAM, SEZ need effective land reform (economic and industrial growth).
- 3) land rehabilitation and resettlement

of the displaced is necessary for
social justice

4) As India has 16% of world population but only 2% of ^{world's} land, land reforms ensure maximisation of growth potential (\$5 trillion economy by 2025)



Way Forward 1) Implement above schemes with citizen participation.

2) Ensure equitable sharing of benefits with people, government and private companies.

12. India needs to accord more significance to nutritional security than food security. Comment. In this context, suggest a framework that should be adopted by the government to achieve nutritional self-reliance.

(250 words) 15

भारत को खाद्य सुरक्षा की तुलना में पोषण सुरक्षा को अधिक महत्व देने की आवश्यकता है। टिप्पणी कीजिए। इस संदर्भ में, वह रूपरेखा भी बताइए जिसे सरकार द्वारा पोषण संबंधी आत्मनिर्भरता प्राप्त करने के लिए अपनाया जाना चाहिए।

India ranks 94/120
countries in the Global Hunger
Index 2019, with its nutrition
security status as "very serious"

Food security vs nutritional security

1) Food security — mostly achieved in India

— access — PDS schemes, PM
Kisan Kalyan Yojana

— Affordability — proposed one
Nation one Ration Card scheme

— Availability — India is the largest
producer of ~~the~~ milk, 2nd largest
producer of wheat, rice, fruits etc

2) Nutritional security — According to National Family Health Survey - IV — India has high percentage of malnourished (stunted, wasted) children — and anaemic women (53%).

Without nutritional security, food security is futile — human capital needs nutrition to develop mental and physical strength.

Framework for nutritional self-reliance

1) Crop diversification — promote millets, fruits and vegetables

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graph TD
    A["1) Crop diversification — promote millets, fruits and vegetables"] --> B["more nutritious"]
    A --> C["more income for farmers → can afford nutrition"]
    
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2) Food fortification — to improve

macronutrients like vitamins in Rice (eg: Yellow rice).

3) Mid day meal, PDS etc —

i) focus on quality of food rather than just quantity

ii) diversify meals — eg: Halwa served in Tithi Bhojan

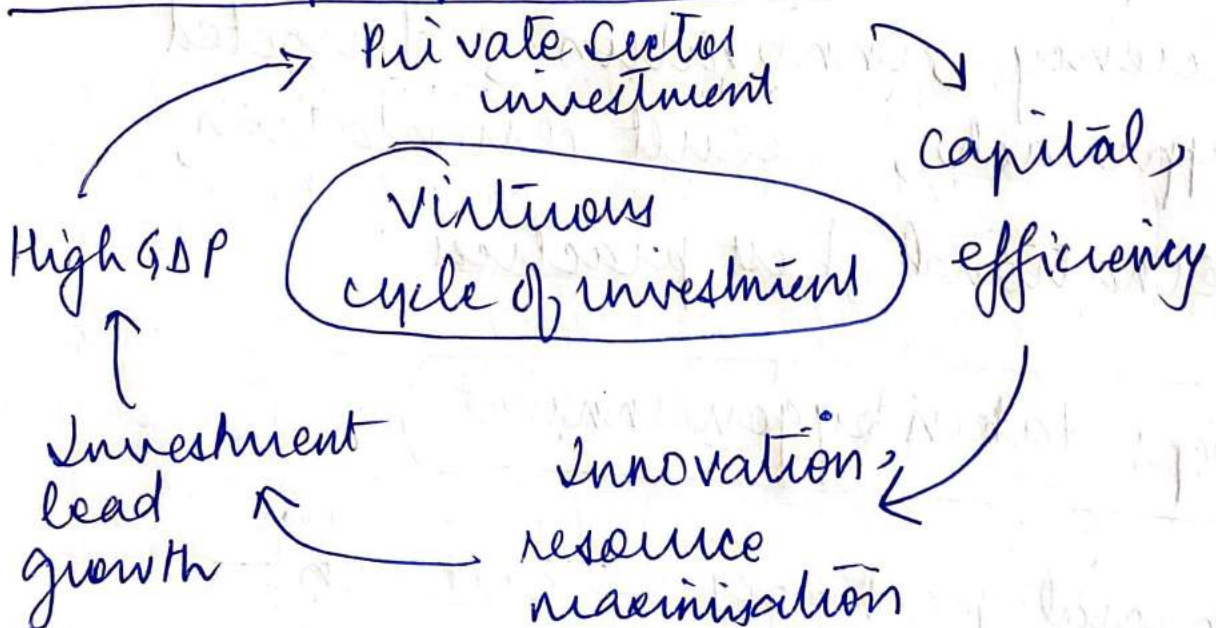
4) Promote 'Jan Andolan' for food nutrition on the lines of Swachh Bharat (use behavioural economics : Economic Survey 2019-20).

Recent steps by government like PM AASHA (for oilseeds and pulses), proposed Direct Benefit Transfer for food subsidy are steps in the right direction.

13. Private investments are key for India to move into a high growth trajectory. Discuss. Also highlight the steps taken by the government in recent times to address the fall in private investments. (250 words) 15

निजी निवेश भारत के लिए उच्च संवृद्धि पथ पर आगे बढ़ने हेतु महत्वपूर्ण हैं। चर्चा कीजिए। साथ ही, निजी निवेश में गिरावट को दूर करने के लिए हाल के दिनों में सरकार द्वारा उठाए गए कदमों को भी रेखांकित कीजिए।

According to the Economic Survey 2019-20, India needs a virtuous cycle of investments, spearheaded by private sector, are vital to achieve \$5 trillion economy by 2025.



Need for private sector investment

- 1) Other sources have shortcomings:
 - i) Banks, NBFCs, Housing Finance Companies — overleveraged, credit crunch.
 - ii) government investment — increases fiscal deficit and leaves less room for social expenditure
- 2) Novel benefits of private sector — efficiency, innovation, targeted approach, result orientation, international best practices.

Steps taken by government

- 1) Special packages — cut in corporate tax rate to 25%.
(government forgoing revenue worth Rs 1.45 lakh crore)

- 2) Special Economic Zones and National Investment and manufacturing zones.
- 3) promoting current account liberalisation — export facilitation — EXIM bank.
- 4) easing up FDI in multiple arenas — defence, civil aviation etc.
- 5) Strategic divestment (BPCL) and asset monetisation (Exchange Trade Funds)
- 6) Ease of Doing Business — eSanchar portal, Treds for MSMEs etc.

~~On the~~ Along with this the government is also maintaining the optimal governance standards to facilitate private sector investment.

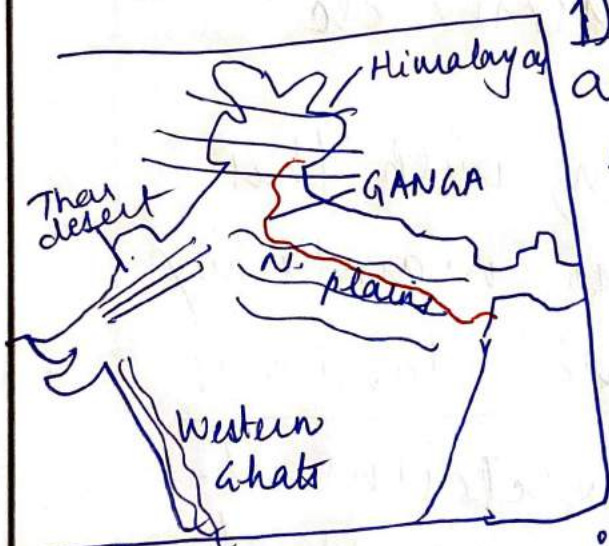
14. India's geographical diversity and varied levels of development across regions necessitate a targeted region specific action plan to ensure a minimum acceptable level of prosperity. Elaborate. (250 words) 15

भारत की भौगोलिक विविधता और विभिन्न क्षेत्रों में विकास के भिन्न-भिन्न स्तर समृद्धि के एक न्यूनतम स्वीकार्य स्तर को सुनिश्चित करने के लिए एक लक्षित क्षेत्र विशिष्ट कार्य योजना को आवश्यक बनाते हैं। सविस्तार वर्णन कीजिए।

According to UN's Human Development Index, India has done miraculous job of lifting 275 million people out of poverty from 2005-16. However, regional differences in prosperity warrant targeted approach

GEOGRAPHICAL DIVERSITY and VARIED LEVELS OF DEVELOPMENT

North and ^{North} West India



1) Mountains - Jammu and Kashmir, Himachal

etc -

- i) difficult terrain
- ii) low service or manufacturing sector penetration

iii) development via fruit orchards,

self employment.

iv) special challenge - border security.

2) Northern plains - UP, Bihar etc.

i) fertile plains - agriculture lead growth

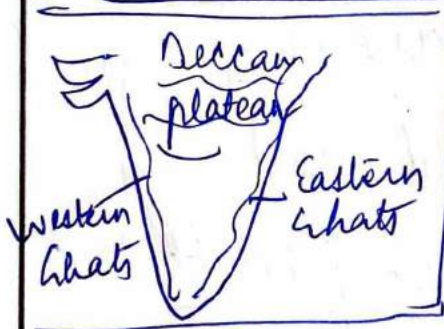
ii) challenge - high population, emigration, low income levels, low literacy etc.

3) ~~the~~ North west - { Punjab, - cradle
Haryana of green
revolution
Rajasthan - desert

i) challenge - water scarcity, weak sex ratio etc

ii) developed via agriculture, manufacturing and services (Ludhiana etc)

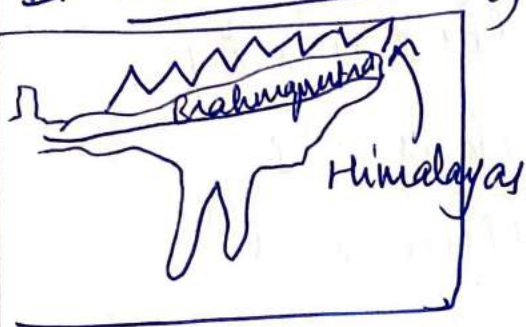
II South, Southwest India



1) Benefits - High GDPs - Maharashtra, Gujarat, Tamil Nadu

2) Issues - cyclones, environment vs. development debate.

III North East



- 1) Perous borders - traffi-
cking, insurgency
- 2) Scope - tourism,
organic farming

Hence, need for region targetted growth.

Steps taken by government

- 1) North East vision 2030 - for
tourism, local industry lead growth
- 2) Bring Green Revolution to Eastern
India Scheme - for Bihar, West
Bengal etc.
- 3) Finance commission - special
grants to backward areas.

Seeing the geographical and
development diversity, one size fits all
approach is to be avoided

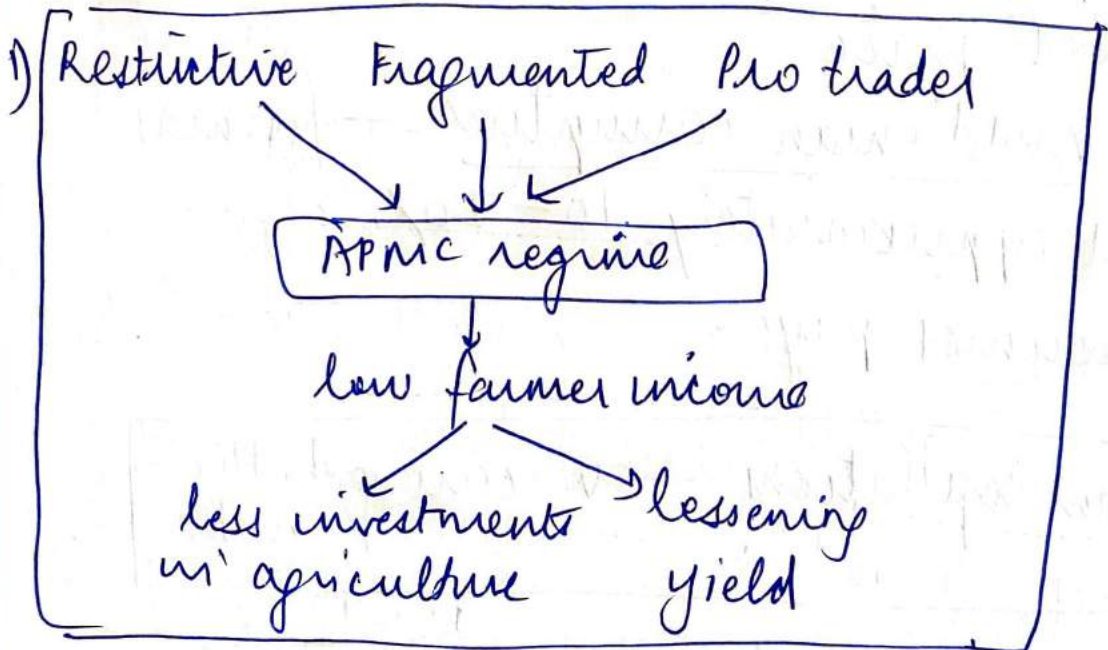
15. Empowering the farmers by ensuring barrier-free trade in the agriculture produce is critical in doubling their incomes. Enumerating the existing bottlenecks, discuss how the recent legislations can help in overcoming them.

(250 words) 15

कृषि उपज का निर्बाध व्यापार सुनिश्चित करके किसानों का सशक्तीकरण करना उनकी आय दोगुनी करने में महत्वपूर्ण है। वर्तमान बाधाओं का उल्लेख करते हुए, चर्चा कीजिए कि इन पर नियंत्रण पाने में हालिया अधिनियम कैसे सहायता कर सकते हैं।

According to MS Swaminathan committee, agriculture marketing should be moved to concurrent list ^(7th schedule) to ensure barrier free trade.

Existing bottlenecks



The APMC regime ⁱ⁾ restrict farmers from selling at choice of market

i) an average APMC is at a distance of 450-59 km from farm gate compared to recommended 80-99 km.

2) other barriers for farmers

i) according to Shanta Kumar ~~Basad~~ committee, only rich farmers benefit from MSP

ii) lack of last mile infrastructure
— perishability of produce —

lower price

iii) middleman corruption — farmers get approximately 10-20% of what consumer pays.

Recent legislations — overcoming bottle-necks

1) Farmers Price Assurance Act 2020 — promotes Contract Farming —

assured income, develops backward

and forward linkages .

2) Farmers Empowerment Act 2020 — allows farmers to sell produce outside APMC → better price discovery, market diversification .

3) Amendment to Essential Commodities Act 2020 → agricultural commodities won't be declared 'essential' unless in times of emergency .

4) These legislations, coupled with recent reforms like E-NAM, convert Gramin Haats to GRAMs, promotion of FPOs are critical to doubling Farmers Income .

As said by Dalwai committee, doubling farmers income by 2022 is pivotal for food security and growth of India .

16. The reasons for recurring floods in the regions of Eastern India such as Bihar and Assam go far beyond their topography. Discuss. Also, suggest measures to control this menace. (250 words) 15

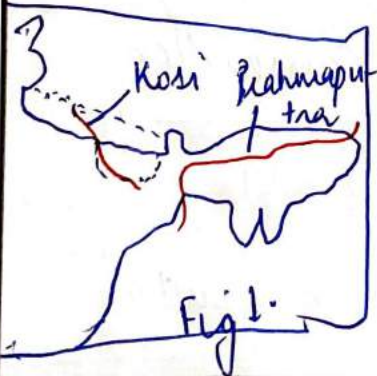
बिहार और असम जैसे पूर्वी भारत के क्षेत्रों में बार-बार आने वाली बाढ़ के लिए केवल उनकी स्थलाकृति उत्तरदायी नहीं हैं। चर्चा कीजिए। साथ ही, इस खतरे को नियंत्रण में लाने के उपायों का भी सुझाव दीजिए।

Eastern India, particularly Assam and Bihar, face destructive floods every year. Flood refers to the inundation of land by massive rainfall, tidal action, cloud burst etc.

Reasons for recurring floods in Eastern India

1) Topography — Assam's Brahmaputra and Bihar's Kosi river flow down stream and gain massive ~~ex~~ force of water (Fig 1)

2) Reasons beyond topography



i) Unplanned urbanisation
— has disrupted natural

- flood controlling ability of land
- i) deforestation for agriculture — trees act as flood stoppers
 - ii) geopolitical — China doesn't share hydrological data on Brahmaputra regularly.
 - iii) insufficient Disaster Resilient Infrastructure like tide walls in Japan exacerbate floods
 - iv) meteorology — climate change induced unprecedented ^{volume of} rains in southwest monsoon
 - v) These factors are impacted by lower prosperity in the region — overpopulation and slow ~~in~~ development implementation of disaster management plans.

Measures to control menace

I) National Disaster management authority guidelines —

- 1) pre disaster — hazard mapping, vulnerability assessment, preparatory drills etc
- 2) while disaster is on — quick rescue (NDRF battalions), food and medicine supply etc
- 3) post disaster — rehabilitation to proper area, recovery of damages, employment ~~and~~ etc.

II Long term —

- i) invest in disaster resilient framework: Sendai framework — for every \$ 1 invested in disaster reduction, \$ 7 are saved.
- ii) International collaboration like National Cyclone Risk Management Policy, data sharing with China — implement properly

17. How can 5G technology potentially bring about a digital revolution in India? Identify the challenges in adoption of 5G technology in India.

(250 words) 15

5G प्रौद्योगिकी संभावित रूप से भारत में एक डिजिटल क्रांति कैसे ला सकती है? भारत में 5जी प्रौद्योगिकी को अपनाने में आने वाली चुनौतियों की पहचान कीजिए।

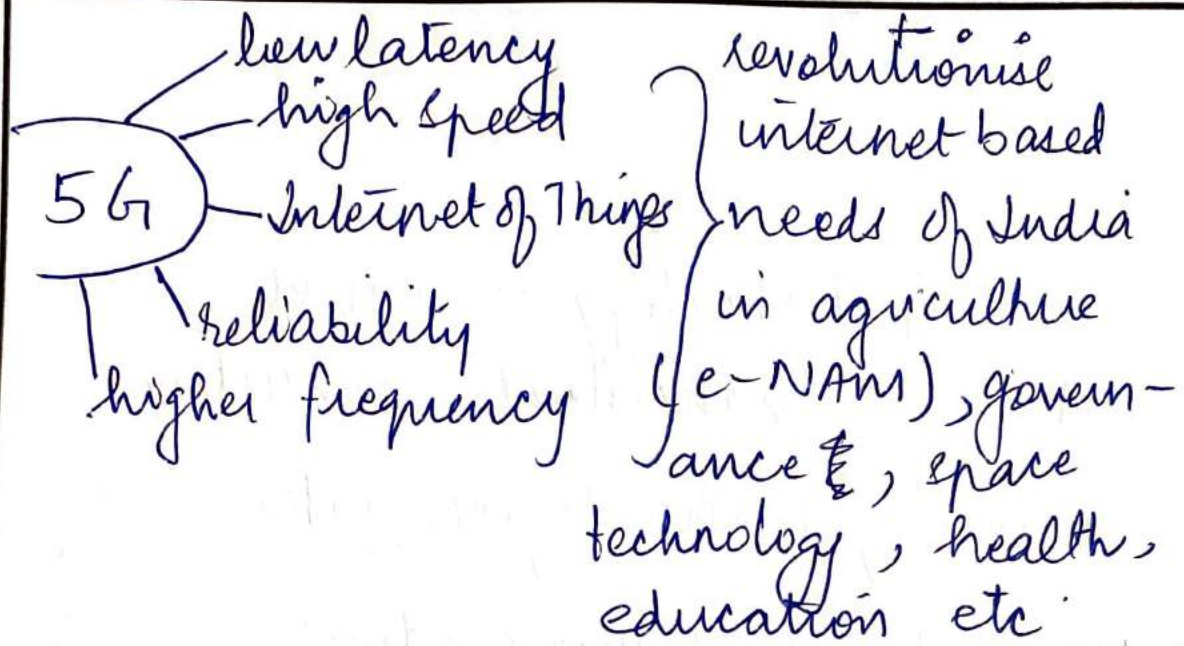
5G technology is a next generation advancement consisting of a range of technologies like MMIO, Internet of Things etc.

Potential for digital revolution

1) India has 2nd largest users of internet in the world

2) Governmental shift — Digital India program, Digital India Land Record Modernisation program, National e-governance plan —

INCREASING NEED for fast, reliable efficient network.



Challenges in adoption of 5G

- 1) bandwidth issues — our bandwidth is restricted, 5G needs high frequency
- 2) inefficient spectrum allocation
- 3) lack of infrastructure like optical fibres.
- 4) Digital divide — Internet penetration is ~25% in rural but ~65% in urban areas

- 5) Data privacy law yet to be enacted
- 6) Need for skilled workforce.
- 7) Geopolitical : Huawei by China wants to invest in India's ~~5G~~ 5G growth but security concerns.
- 8) Bureaucratic hurdles : multiple overlaps between ministry of communication and ministry of science and technology.

Way Forward

- 1) Recently, government announced allocation of 5G spectrum in coming months
- 2) 5G's developmental aspects need to be balanced with digital sovereignty
- 3) Schemes like PMGDISHA, Digital India are steps in the right direction

18. Besides computing, quantum technology has potential applications in various areas. Discuss. What are the challenges which lie ahead for effective utilization of quantum technology? (250 words) 15

संगणना के अतिरिक्त, क्वांटम प्रौद्योगिकी के विभिन्न क्षेत्रों में संभाव्य अनुप्रयोग हैं। चर्चा कीजिए। क्वांटम प्रौद्योगिकी के प्रभावी उपयोग के समक्ष आने वाली चुनौतियां क्या हैं?

Department of Science and Technology has announced a National Mission on Quantum Technology worth Rs 8000 crore.

Quantum technology encompasses subatomic level processes. Recently, Google's computer Sycamore claimed quantum supremacy.

Application in other areas besides computing

- 1) Artificial intelligence based robotics
- 2) Data analysis - big data processing.

3) Solving scientific problems that human and conventional computers cannot eg: Black Hole mystery

4) Virtual Reality - stimulated gaming and situation assessment

5) Health research, developing novel breakthroughs

6) Defence technology - cyber warfare and security

Challenges for effective utilisation

In India

i) lack of standardised framework of regulation

ii) low spending on research and

development (0.7% of GDP)

iii) lack of skilled workforce, special
ised research centres

iv) data privacy, cyber security

* issues (Recent Kundakulam nuclear
plant got hacked).

In world

i) insufficient multilateral focus on
Quantum technology

ii) implications for national security:
may lead to geopolitical race like
the space race

Way Forward) Synergising the
benefits of quantum technology with
appropriate safeguards is the need
of the hour.

19. While most insurgent groups in North-East India have given up violence and are engaged in peace talks with the government, a number of issues could create hurdles in the future. Discuss. (250 words) 15

जहाँ पूर्वोत्तर भारत में अधिकांश विद्रोही गुटों ने हिंसा छोड़ दी है और सरकार के साथ शांति वार्ता में संलग्न हैं, वहीं अनेक ऐसे मुद्दे हैं जो भविष्य में बाधाएं उत्पन्न कर सकते हैं। चर्चा कीजिए।

According to the Ministry of Home Affairs, there has been a 75% reduction in North east insurgency events between 2014 and 2019. This is complimented by the recent Bodo Accord (2020).

Issues that could create hurdles

1) Peace talks provisions

i) Bodo accord (2020) → Bodoland Territorial Region is making non Bodos like Chakmas and Hajongs insecure for security.

ii) Despite peace talks, Naga leaders

have not entirely let go of demands for greater Nagalim

→ impacts federalism : Manipur, Arunachal Pradesh wary of Greater Nagalim

→ international relations : probable tensions with Myanmar as Greater Nagalim includes its territory

2) porous borders - misuse of free movement regime leading to

i) drug trafficking (Golden triangle)

ii) smuggling of arms

iii) money laundering

iv) refugee influx - Rohingyas - terrorist links

3) International interests - groups like

ULFA and NSCN-IM get aid from China.

4) hard terrain, insufficient transport
→ hinders private sector investment
and economic growth

5) Recent spur in demands for 6th
Schedule, Inner Line Permit status

Show differences .

Measures taken by government

1) North east Gas Grid, Vision Plan
2030 to increase development .

2) Look East → Act East : role to

State governments in agenda setting .

Way Forward → Bezbaruah committee

recommends effective utilisation of
North East council and cultural
integration with mainland as sustainable
solution to North East insurgency .

20. Identifying the key vulnerabilities in India's cyberspace, discuss the framework which should be adopted in the envisaged new cyber security policy in India. (250 words) 15

भारत के साइबर जगत में प्रमुख सुभेद्यताओं की पहचान करते हुए, उस रूपरेखा पर चर्चा कीजिए, जिसे भारत में परिकल्पित नई साइबर सुरक्षा नीति में अपनाया जाना चाहिए।

Cyberspace refers to the interconnected grid of devices, communication networks and data passage in the Information and Communication Technology ecosystem.

Vulnerabilities

- 1) Research by Symantek — India is 3rd most vulnerable ^{nation} to cyber attacks
- 2) National Crime Records Bureau data — cyber crime incidents → quantum jump between 2018-19.
- 3) Lack of Data Security Law.

4) ~~#~~ cyber security illiteracy of users:
for eg: rising instances of phishing
5) lack of consolidated law on
cybersecurity — IT Act 2000 and
IPC have some sections

7) International → Stuxnet virus
attack on Iran

8) Anonymous nature of cyberspace
makes it difficult to detect or
ascertain crime.

9) lack of skilled workforce — most
police stations lack expertise.

[Framework for new cyber security policy]

1) National Cyber Security Policy 2013 —
CERT-IN, National Critical Information
Infrastructure Protection Centre,
Cyber Swachhata Kendra already exist.

4) other elements needed

- i) dedicated team of cyber security experts
- ii) give statutory status to CERT-IN
- iii) integrate cyber security in every scheme's budget mandatorily
- iv) 'Jan Andolan' to raise people's awareness

v) earmarking specific part of research and development expenditure for cybersecurity

vi) Federal setup — cybersecurity enforcement at National, state and local level for effective tackling.

In the long run, there is ~~a~~ a need to create a dedicated ~~depart~~ legislative framework to deal with cyberspace.