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GENERAL STUDIES (TEST CODE : 1419)

Name of Candidate	Harsh Parashar		
Medium Eng./Hindi	English	Registration Number	214438
Center	online	Date	5 Jan 2021

INDEX TABLE			INSTRUCTIONS
Q. No.	Maximum Marks	Marks Obtained	
1	10		1. 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)।
2	10		2. There are TWENTY questions printed in ENGLISH & HINDI . इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3	10		3. All questions are compulsory. सभी प्रश्न अनिवार्य हैं।
4	10		4. The number of marks carried by a question/part is indicated against it. प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5	10		5. 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।
6	10		6. Word limit in questions, if specified, should be adhered to. प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7	10		7. 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।
8	10		
9	10		
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16	15		
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20	15		
Total Marks Obtained:			
Remarks:			

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.

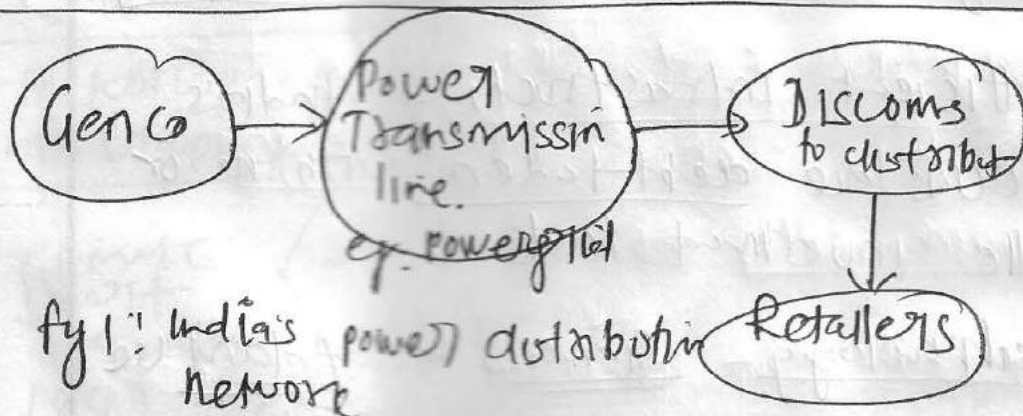
6.

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।

India has 23% of ATnC losses to DISCOMs, which make it one of the highest in the world and low profitability to them.



Issues with DISCOMs

- ① Power purchase Agreement (PPA) renegotiation - After Renewable sources achieved parity in 2014.
- ② Tariff inflexibility - Setup by CERC and SERC, not DISCOM
- ③ ATnC loss - 23% due to ~~the~~ steady power diversion.

- ④ OA policy - for open access consumers (over 1 MW) to relocate frequently causing local vulnerability.

Privatisation of DISCOM

Benefits

- ① Price Regulation - Market suitable changes such as tariff-flexi policy
- ② Efficient infrastructure - India's DISCOMs are debt-laden with no or little investment funds.
- ③ Technology - Siemens or Adani use modern copper-wired infra.

No

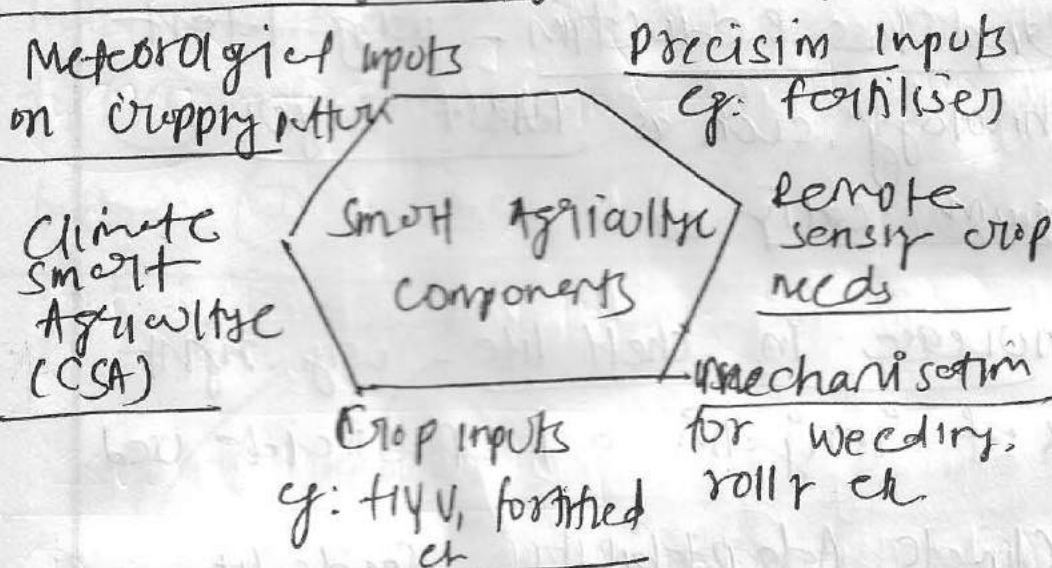
- ① Tariff regulation main cause. Cannot be solved by privatisation.
 - ② Lack of interest by private sector
 - ③ No competition due to public sector monopoly
- Deepak Parikh Committee suggested to keep DISCOMs public & instead shift all OA users separate feeder or aggregator

8

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।

India has 140 mha of Net sown Area (NSA), which is maximum in world, but low productivity makes it below us and China on production output. This can be changed by smart Agriculture



Smart Agriculture for productivity in India

- ① Nutrient use Efficiency (NUE) - Improve due to "precision agriculture"
- ② Mechanisation output - (40%) India (95%) USA

- ③ Climate suitable interventions (CSI)
- such as plastic cover and mulching
against floods etc.
- ④ Higher value cropping - shift from
subsistence levels. Presently, (15%) India
of agri-GDP, (40%) in China.
- ⑤ Crop loss Reduction - using latest
technology, such as Blast Digger,
vaccum sealer etc.
- ⑥ Increase in shelf life - using right
mix of irrigation and pesticide used.
- ⑦ Climate Adaptability - seeds like
IRRI Sahbhyan for drought.

Hence there is a need to shift to
Smart agriculture for "Evergreen
Revolution" by agri-climate-technology
policy

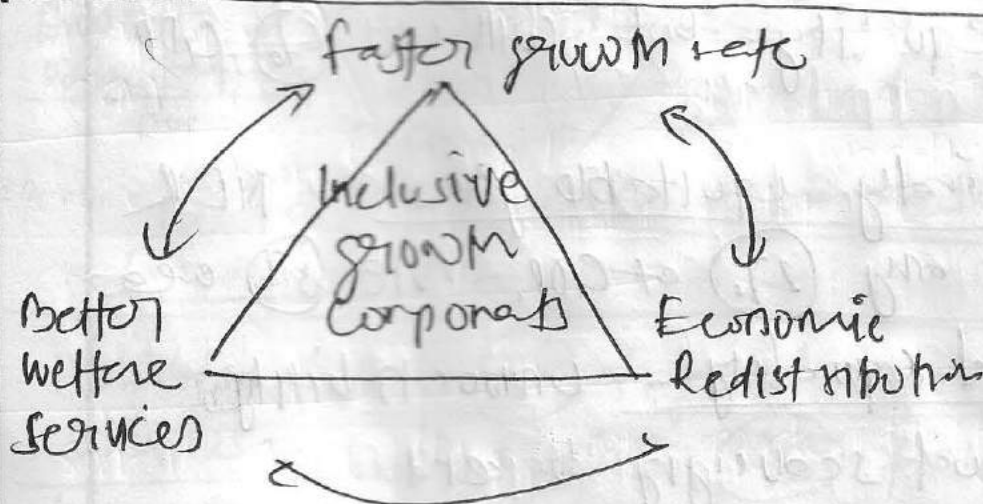
Q5

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 a pattern of growth that integrates social equity with sustainable development, for all sections of society.

India's growth pattern is not inclusive as top (1%) have (59%) of total wealth, while bottom (50%) have only (2%) (Credit Suisse)



inclusive growth is quality over quantity

- ① Emphasizes redistribution - where lower (50%) get higher share.

② Better taxation regime - progressive taxation, where lower wages are out
 ⇒ India's (33%) of tax is direct tax which has better redistribution, while indirect is regressive (eg: GST)

③ Better social security net - free provision of health & education
 only (1.3%) GDP of (4.6%) in India

④ Universal Basic Income - As a facet of equality. But will cost (8%) GDP

⑤ Relatively equitable growth - NER set only (2%) of GDP, while (8%) area

⑥ Social Equality - Untouchability, manual scavenging to end.

Kerala Model of high HDI even with low income should be followed by creating universal Basic Capital (UBC) Model.

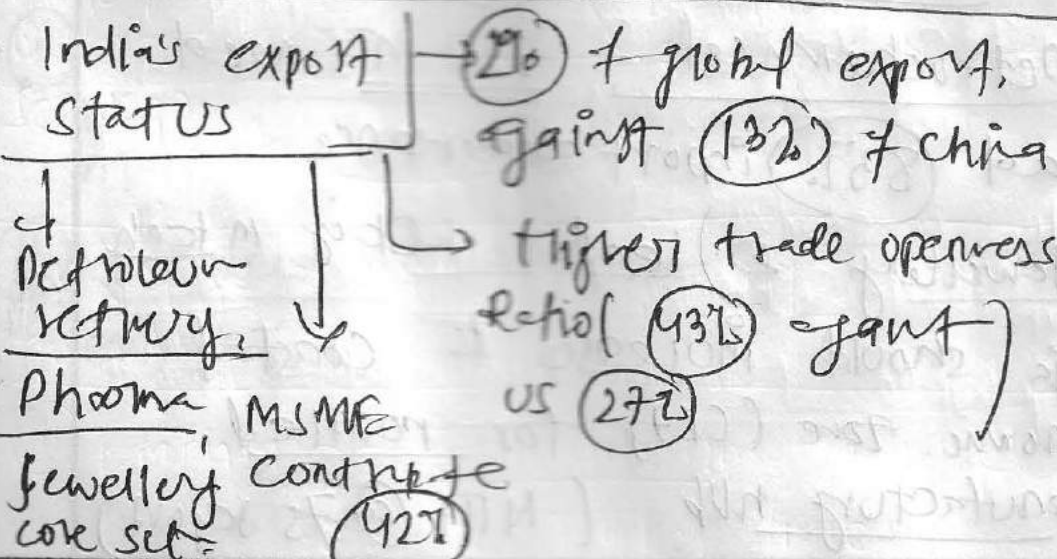
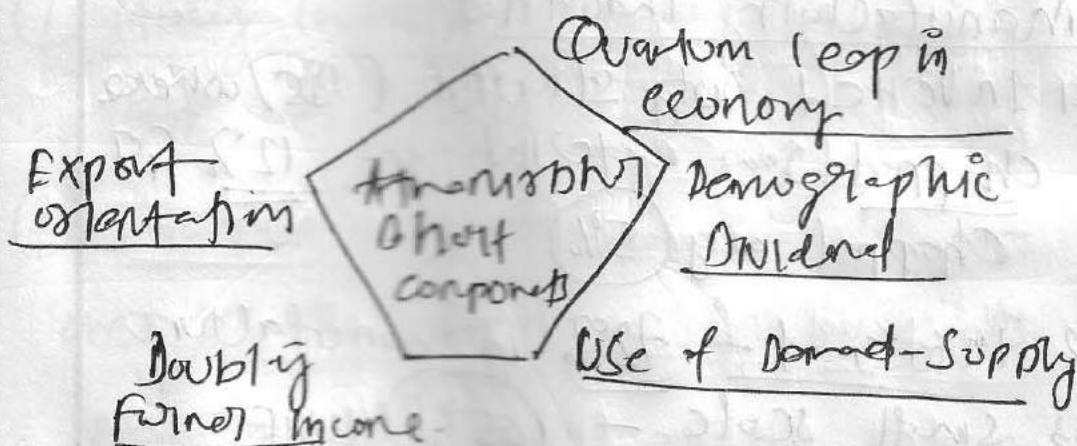
12

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 seeks to convert India into a manufacturing hub, being "self-reliant" for all its needs. It was launched as a scheme in background of COVID disruptions.



Core areas crucial for manufacturing Hub

- ① Agriculture - ^{Industries} Processed Industries only
 (10%) of agri-GDP, (41%) in China
 - Basmati production now at \$4.5B
 and Mame food at \$7B
 - Need for supply chain as Rs 92,000 cr
 worth of food lost.

- ② Manufacturing Industries
 2.1 Inverted Duty structure (IDS) where
chopped raw material get 12% GST
Chopped only (5%)
 2.2 Informal - 72% in manufacturing
 2.3 Small scale - (85%) MSME

- ③ Petrochemical - 227 MT need
 and (83%) import dependence

- ④ Jewellery → Leather leaking in tech
 India should increase its Coastal
 Economic Zone (CEZ) for rostered
manufacturing hub (NITI @ 75 report)

20

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।

Arsenic (As) is a heavy-metal pollutant that is found usually in underground water and petroleum leachates.

Sources of Arsenic

- ① Mining Industry - "Spoilt tips" mine waste with huge As deposit.
- ② IT EEE components - e-waste of over 25 KTN per day has huge As present.
- ③ Geogenic Arsenic - Underground Aquifer rocks contain As.
- ④ Petroleum leachates - By tail pipe emissions.

Consequences

1. Black foot Disease (BFD) due to Central Nervous System (CNS) impact
2. Arsenic poisoning to children
3. Retarded mental growth in pregnant & Lactating women (PWLW) children
4. Impact on eyesight, skin lesions etc.

Measures

1. Use of Arsenic free water by RO dispensers.
2. Arsenic removal by Activated charcoal (AC) usage.
3. Water purification - Effluent Treatment. Presently 23 MFL out of 62 MFL.

India is committed to better health standards under AH 47 and SDG3 to provide Arsenic-free water to all.

25

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।

Green Term Ahead Market (GTAM) is a proposed forward exchange where Renewable Energy (RE) will be traded through futures, derivatives and other instruments.

GTAM features

1. Electronic interface for buyers & suppliers
2. Futures and other derivatives sold or bought
3. SEBI regulation

Benefits to reinvigorate RE sector

- ① Price fixing - Against flexible and shifting RE prices. Presently, around Rs 225/- per unit wind
- ② Price Realization - Market Intelligence

for more competition and reduce monopoly.

③ Benefits to open Access (OA) users to reduce cost of power by better negotiation.

④ variable RE (VRE) - like during monsoon in solar or in wind during calm periods can be resolved.

⑤ RE bundling - A consumer can access bouquet of REs, such as wind, solar, ocean thermal etc.

However, this will still have challenges such as absence of interstate transmission system (INSTS) and cross border pricing.

However, GTAM will create economies of scale and integrate fragmented RE market, making it efficient.

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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।

Use of science and Technology (S&T) is a prerogative under "Disaster Risk Governance" under NDMF 2016. This shows its importance in Disaster Management (DM), especially GIS & Remote sensing.

Increasing Importance of
tech in DM

1. High Performance Computing (HPC) by IMD for monsoon prediction.
2. UCERF3 model by California for earthquake prediction.
3. Drones for Search & Rescue (SAR) missions.
4. use of Automated floodgates & AI for dam water release etc.

GIS for DM

~~Geographical~~ layer sensing (GIS) can be used by

- ① Hazard Zonation (Maps created by IMD and GIS for landslide & earthquake)
- ② Monitor The earthquake origin & its prediction
- ③ Biodiversity movement. eg- Use in Kaziranga beel in 2019 Assam floods

Remote sensing for DM

- ① MODIS VIIRS for forest-fire detection
- ② InSAR (Synthetic Aperture Radar) used to study Tsunami ocean bed
- ③ Satellite sensing of movement of cyclones. eg: Vayu and Tillu renewable

Hence, GIS & Remote sensing are very useful to shift from disaster management to "Disaster preparedness" as part of Sandai framework.

40

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" which can be used to edit genome by cutting and pasting relevant portion with high precision. It is based on a bacteria's natural protection measure against bacteriophage.

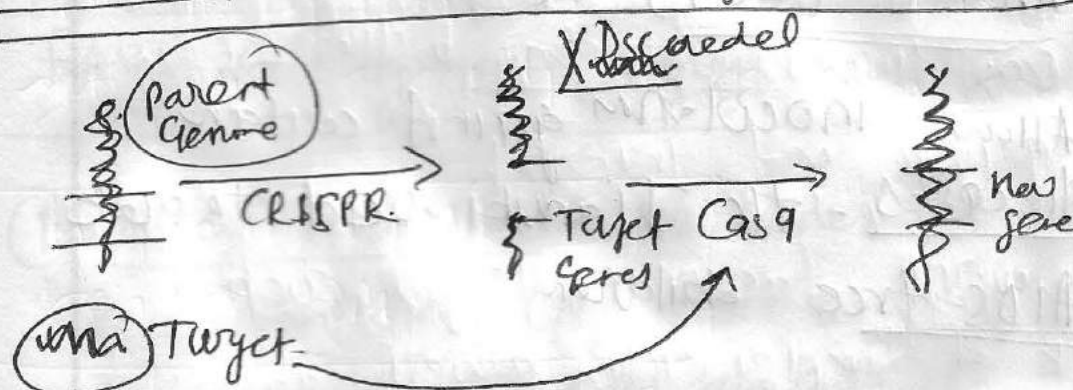


Fig: CRISPR-Cas9 flow schematics

Revolutionized Genome Editing

- ① High precision - over previous techniques like mRNA for genome editing
- ② Increased accessibility - very cheap rate per conversion
- ③ Accurate Denaturation - low failure rate

Applications

- ① Health care - Against Cancer and other diseases with direct impact on genology.
- ② Genetic Disorders in babies - by treating Thalassemia, sickle cell anemia (SCA) etc.
- ③ Allow inoculation against certain diseases - He Jianwei, used to create AIDS-free children.
- ④ Biofortification of food - insert cry1Ab & cry2Ac genes for disease resistance & nutrition -
eg. Golden Rice
- ⑤ Bio-engineering - of new species.
However, it is still in development phase and long term effects not fully understood.
There should be a global ban on its human genetic use.

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।

FATF is a "global watchdog of money laundering" and terror financing, founded by G7 in 1989. It works under OECD umbrella.

FATF Role against money laundering

- ① Policy Guidelines - 40 general Recommendation (GR) and 8 special Recommendation (SR) against money laundering. (AML)
- ② International grouping - labels countries as "black-list" or "grey list" for non cooperative or tax havens.
- ③ Counter Terror financing (CTF) - guidelines to prevent money launder into TF.

④ International Consensus - on the need for uniformity through aligning "corresponding law" between countries.

⑤ Intelligence support - to national bodies, such as EU-India & Department of Revenue Intelligence (ORI)

⑥ Coordinates with other bodies - Egmont group and Interpol.

However, it faces challenges such as lack of implementing power, absence of universal membership and biased structure to favour OECD countries.

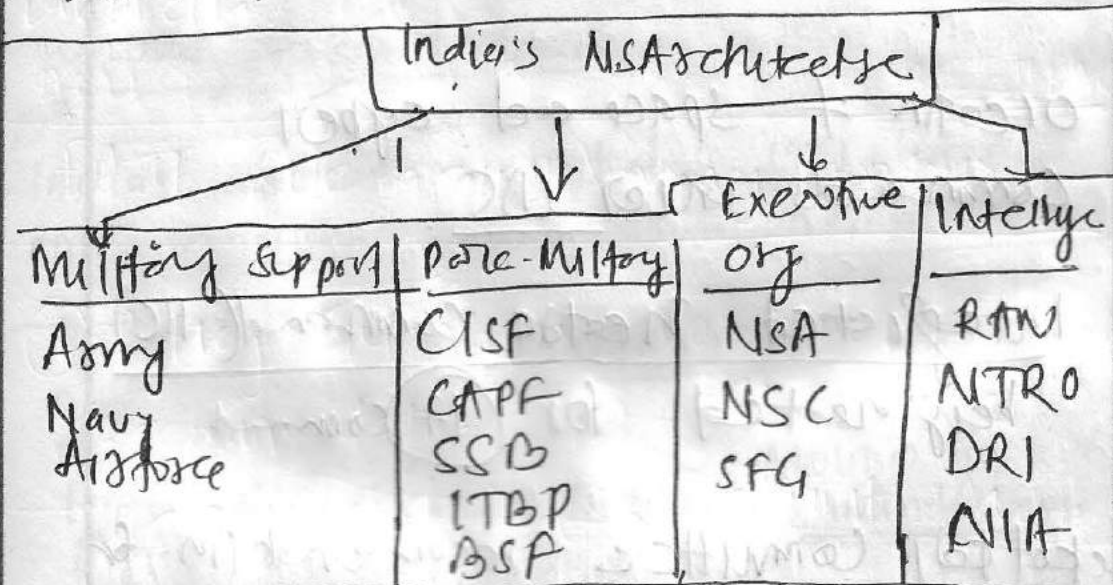
India suggested fraudulent economic offenders (FEOs) to be added to FATF agenda, which should be immediately done.

55

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।

India's National security Architecture is the group of all institutional and organizational setups to ensure security - internal and border-wise.



Recent reforms

① Chief of Defense Staff (CDS) as "Permanent Chief of Staff Committee (COSC) and Secretary of Dept of Military Affairs (DMA)"

② Integrated Battle Groups (IBGs) for
3T - Terrain, Threat, terror suitability
in Army.

③ National security Advisor (NSA) to
head National security committee

④ Create 7 space and cyber
commands under CDS.

⑤ Integrated Theatre Command (ITC)
being created for 12 commands

Shakti committee recommendation for
full top-bottom integration can be
done by 3A principle of Revolution
in Military Affairs (RMA).

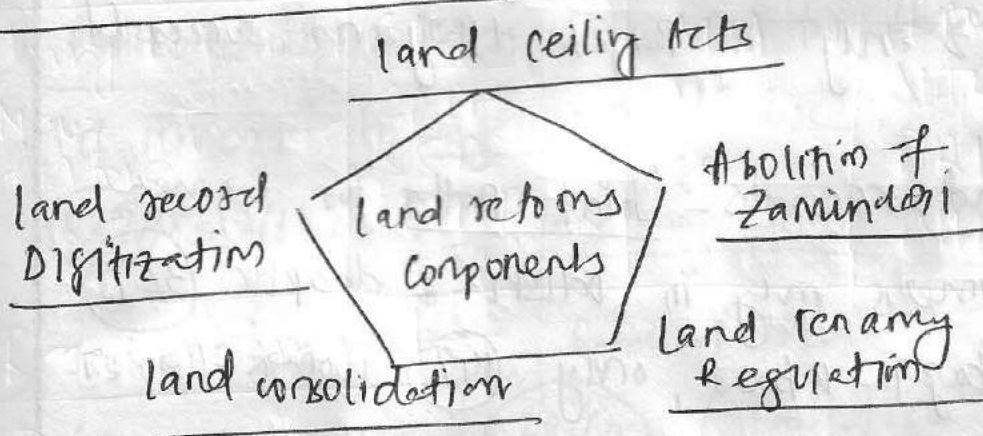
01

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 refer to the administrative and legislative measures, needed to transfer ownership or controlship of land from a "small number of largeholders" to large number of smallholders."

India's land reforms started in 1951, but are still unfinished, as per Swaminathan Report.



key hurdles

- ① land ceiling Acts - exclude a large type of lands, like ex-sarvati mahal land in west Bengal Hospitals & Plantation lands

② statewide differences - Bihar & Himachal
prohibit all land tenancy

→ West Bengal doesn't have land
tenancy laws.

③ Liberalisation reforms - After NEP 1991,
land reforms took backseat, while
productivity reforms came in focus.

④ land consolidation - Unequal types of
land, resistance by farmers.
→ only in Punjab, Haryana successful.

⑤ land records - 'Joint Patta' for women
farmers only in Odisha. despite (32%)
of total labour, only (14%) women farmer.

Advantages of land Reform in
contemporary times

① Social Mobility - India ranks 76/82
on WEF social mobility index for
lower landless castes.

② female empowerment - Gain access to formal sector credit with land ownership for "Mahila Kisan"

③ Rurban Migration - currently (25%) and increasing, will be directed with viable alternative.

④ farmer protests - Against corporatisation of agriculture will stop.

⑤ Productivity - More incentive for farmers to invest in agriculture, like

(82%) smallholders (<2 ha land)

⑥ Landless farmers - End of modern slavery, around (1.8 Cr) (Walt free foundation)

hence, land reforms can be beneficial.
Karnataka model of land reforms by digitization of records and Odisha Model of joint patta are needed under Art 39(b), 39(c).

11

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 has achieved food security with over 300 MT of cereal production in 2018-19. But, in nutrient security, it is lagging as it ranks 94/107 in Global Hunger Index (wett hunger mitte)

Need for Nutritional security

① wasting - (35%) of India's children.

② stunting - (25%) of India's children.

③ underweight - (1/3rd) of world's children in India

④ Anemia - (50%) women, (60%) tribals.
(20%) women severely anemic

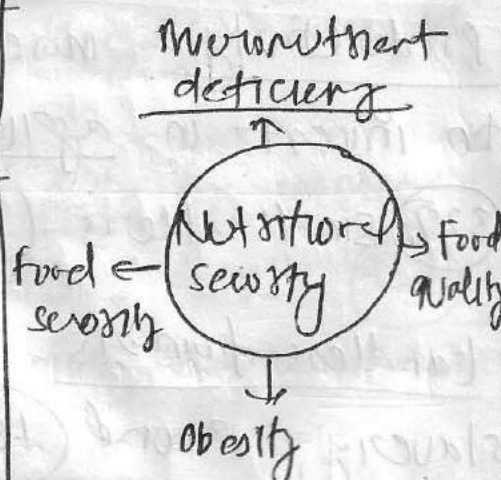


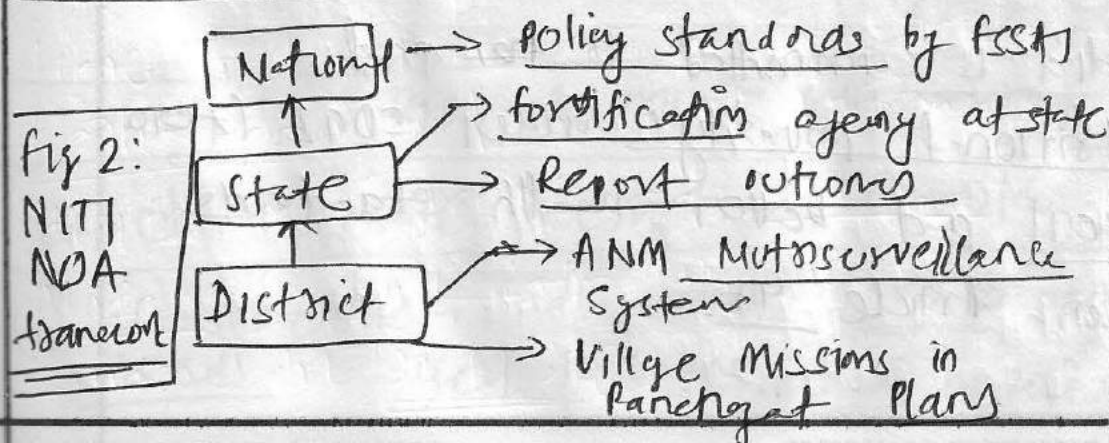
fig 1: components

- ⑤ Health outcomes - India 5M lowest in WHO Global Health security index.
- ⑥ Demographic Dividend - (World Bank)
Can add 2% to GDP with right policies.

India's food security status

- ① food self-sufficient with 300 MT of Cereal production in 2019-20.
- ② horticulture production 302 MT in 2018-19, more than cereals.
- ③ food exporter status \$4 B of beet, \$2 B of sugar, \$7 B more.

framework to be adopted for nutritional self reliance



NITI in National Development Agenda (NDA) has suggested a bottoms-up three layered plan for nutritional security.

- ① District level - Nutri-surveillance by ANM and AASHA workers by school inspection and household surveys.
- ② State level - Bio-fortification agencies and Biologics intervention.
→ reporting centre to compile Panchayat Development Plans (PDP) on nutrient intake
- ③ National level - FSSAI or other GRAI body for fortification standards.

India is committed to ~~the~~ end 'nutritional poverty' under SDG2 (zero hunger) and better health standards under Article 47.

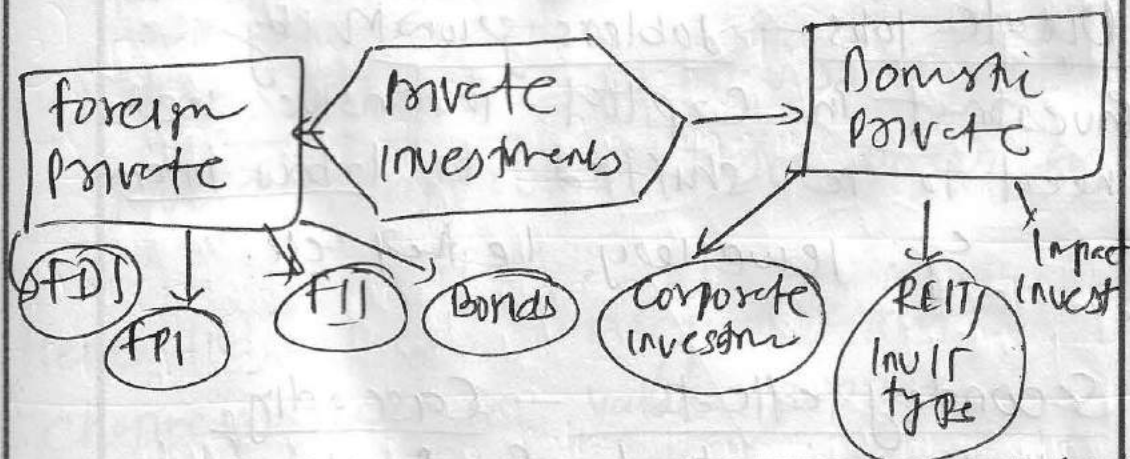
24.

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।

India received \$286 B of FDI as foreign private investment besides domestic Direct Investment (DDI) in 2014-19.

This could propel India into a high growth trajectory as "world's fastest growing large economy" to \$5T by 2025.



[Type: Types of private investments]

Impact of private investment on Growth

- ① Infrastructure - India needs \$252 B per year to achieve \$5T by 2022

- ② Private philanthropic funds -
Needed for impact investing. Already
raised \$5.2 b worldwide in 2019.
- ③ Technology development - Investment
in new tech like India Vande Bharat
Express, Make in India Mission
- ④ Human development - Skilling
institutions needed, since only 5% is
formally skilled in India.
- ⑤ Create jobs - Jobless growth by
investment in capital-intensive sector
need to be shifted to labour-intensive
eg. Jewellery, leather etc.
- ⑥ Secondary effects - Cascading
effect of investment of private fund
into road, train etc.
- ⑦ Four Balance sheet (~~4B~~) problem -
Banks overstressed with NPA, need
private investment

Government steps

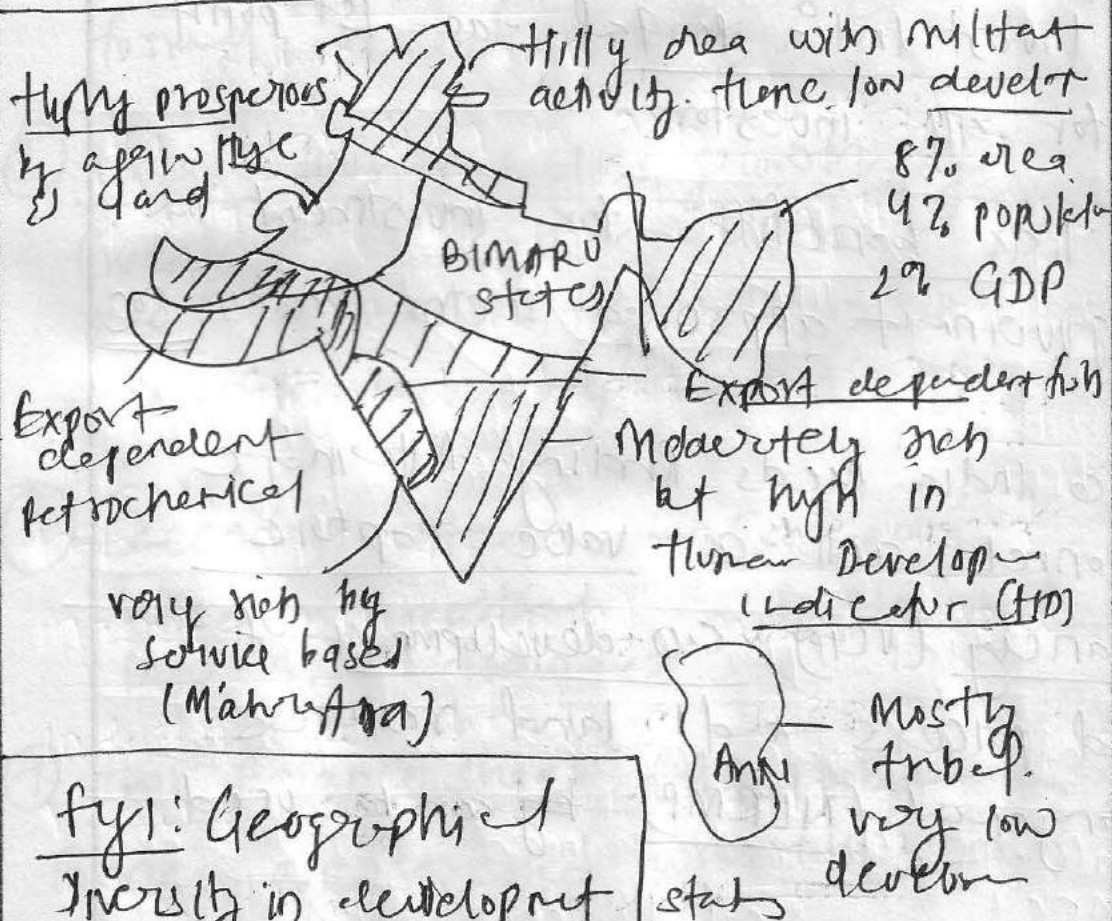
- ① National Infrastructure and Investment fund (NIIF) - A \$40 000 Cr equasi sovereign wealth fund for foreign agencies like AIDA etc.
- ② FDI provisions - foreign Trade policy (FTP) relaxed for defense, railways, multi-brand retail etc.
- ③ Invest India portal is 1st point for all investors.
- ④ Tax benefits - for investment into government approved sector under 80C

Hence, India needs finding Alternate channels such as value capture financing (VCF), co-development of land parcels and land resource management (NLRMP) ~~by~~ can be used.

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।

India's development has led to a widely uneven pattern of growth, leading to gross inequality, as shown in Oxfam's Commitment to Reducing Inequality (CRI) rank of 147/157.



Cause of Geographically diverse development states

- ① Skilled and Human Development Differences - very low in Bihar, MP, Rajasthan, Uttar Pradesh (BIMARU) states but high in south Indian states.
- ② Model of Growth - Export based Gujarat model, versus remittance based Kerala model.
- ③ Geographical challenges - NEER with almost (67%) forests, and ~~low~~ hilly states.
- ④ Government policies - Berauni plant in Bihar led to development of nearby areas.

Need for region based plans for minimum prosperity

- ① Different challenges - Education in Northern states, Remunerative agriculture in western.

- ② Different Resource base - Egtern
like chotanagpur plateau rich in
Resource, but "resource curse", low in
alluvial plains.
- ③ Regional challenges - tribalism in
North East. Communalism in North
and linguism in south.
- ④ Relative Deprivation - uneven patterns
of growth cause
- 4.1 Naxalism in Dandakaranya
 - 4.2 Tribal - Migrant Clash like 1984
Assam
 - 4.3 Migrant Attacks eg: 2008 Mumbai

India can adopt a "Resource based
Manufacturing (RBM)" model where
industries are based on regional
resource, suggested in NITI @75
report.

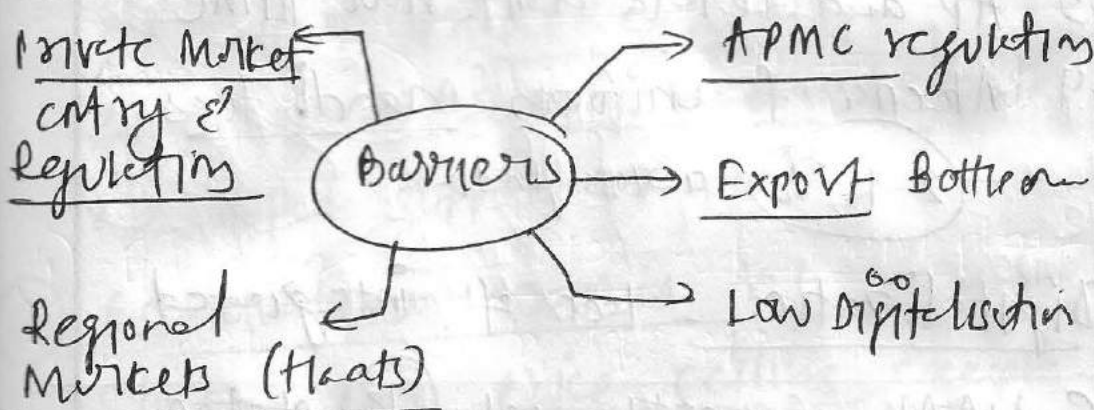
46

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।

India's agriculture is fragmented, since it is a state subject under 4th schedule, which creates inter-state barriers despite ART 301 (free Trade & intercourse across India)

Need for barrier free Trade



By then it will double farmer income

- ① Price Discovery - only 15-40% now.
- ② Income stability - shift to other produce based on needs and agriculture market into.

③ Export increase - currently (10%) of all India exports.

④ Better contract farming and forward integration.

Current bottlenecks - Barrier Free Trade

① APMC -

1.1 Inflexible APMCs with monopoly.

1.2 one APMC per (450 km²), need per (80 km²)

1.3 AP and Kerala don't have APMC

1.4 Absence of uniform Mandi fees - (2-15%) across India.

② Digitalization - lack of integrated e-NAM, currently only (18) states are onboard.

③ Agricultural Market Intelligence (AMI)

- NCDEX and other commodity exchanges are lacking in information

- 4) Absence of private players like ITC in the game.

Role of current legislations

- ① Trade and commerce Act - Allow for price deregulation and end of APMC monopoly

1.1 Allows private players to end artificial monopoly

1.2 Rationalize market tax to 25%

- ② Price Act - Contract farming

2.1 Better price Realisation

2.2 forward & backward integration

2.3 Input support to farmers

- ③ Essential Commodities Act - End stock and price ceilings except in exceptional circumstances

& private warehouse creation, current only (7200)

India needs to shift from agri-production to agri-marketing for doubling income of farmers.

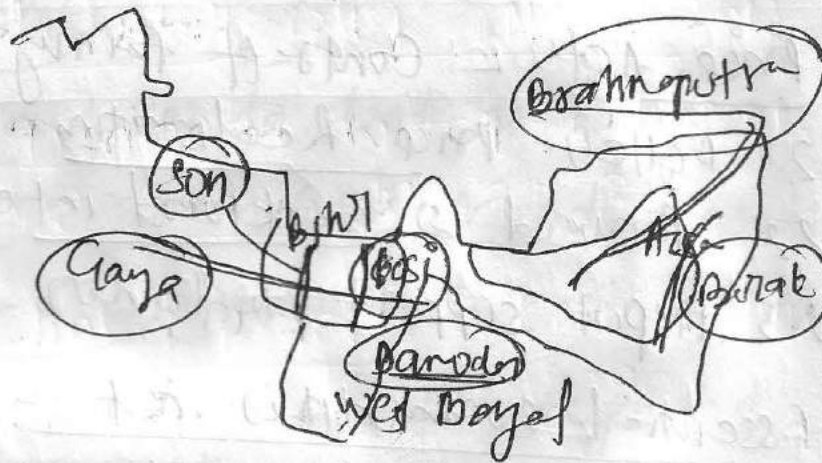
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16. The reasons for recurring floods in the regions of Eastern India such as Bihar and Assam go far beyond their topography. Discuss. Also, suggest measures to control this menace. (250 words) 15

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।

According to Rashtriya Badh Aayog,
12% (40 mha) of India's land is
susceptible to annual floods, especially
in eastern Indian states such as
Bihar & Assam

fig 1:
Eastern
state
and rivers



Reasons for flooding

Topography

1. Alluvial Plains of Bihar - over flooded
in monsoon by Ganga koshi,
Mahananda, Son etc.

2. Hilly areas of Assam - Brahmaputra valley with huge sediment load by tributaries.

3. low-lying areas - Assam plains in Borak valley. Also, alluvial plains of Bihar.

4. Multiple rivers - ~~Indus~~ Ganga & Brahmaputra criss-cross, with huge load.

Other non topographical reasons

① Wetland encroachment - 1/3rd of Assam wetland by people

② Traditional water bodies - Pyne and Ahar of Bihar are drained, which used to absorb water.

③ concretisation - Rapid water buildup.

④ Faulty urban designs - Patna haphazard growth, especially in Kankar bagh area.

⑤ lack of water information sharing -
"Water Data Agreement" with China
only on Settou & Brahmaputra, not
tributaries. Similarly, Nepal for
Bihar.

⑥ flood cushions - Absent on Farakke
& Tehri dams.

Way forward

① flood cushions - As suggested in
National Water Policy (NWP) 2012

② Revive Traditional water bodies like
Kohls & sarajams.

③ water linking projects - Kosi-Mechhi
in Nepal - India.

④ water info-sharing regularly for
Gandak, Son etc.

India should move to a "three phase
flood-control regime" - pre-monsoon,
in-monsoon, post-monsoon.

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।

If "Data is the new oil", "5G will be the new pipes that will deliver it, bringing a new Digital Revolution, that will drive Industrial Revolution (IR 4.0)"

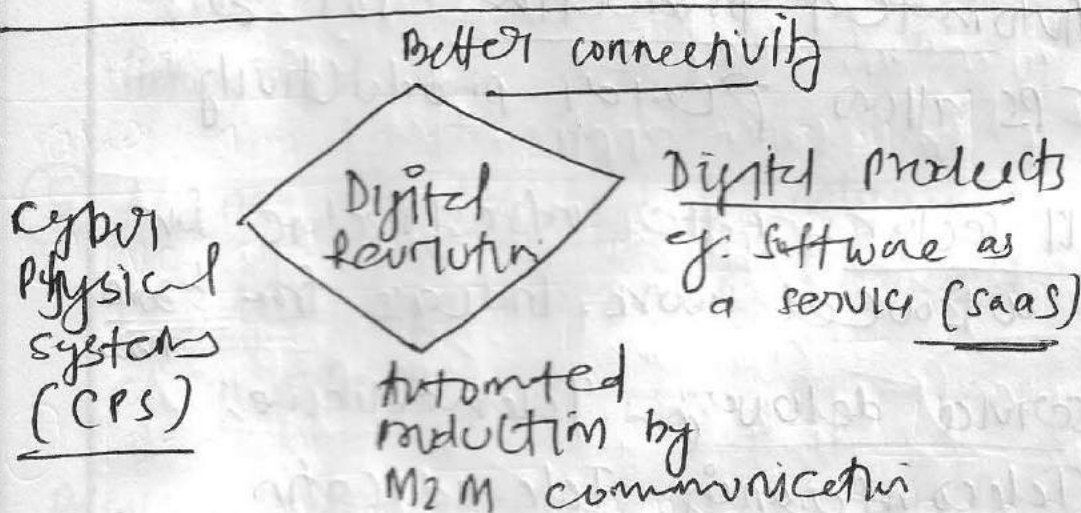


Fig 1: Meaning of Digital Revolution

5G Role in Digital Revolution

- ① Congestion Relief - Allows massive Input massive output (MIMO) Connectivity.

② Faster speeds - 20x speed than 4G
(around 20 Gbps) with latency (20%)
(50 μ s $\rightarrow$ 10 μ s)

③ Better data bandwidth - 24-100 ^{GHz} ~~GHz~~
mmwave technology that allows
more bandwidth.

④ Automated production - IoT &
CPS allow greater productivity.

⑤ IT sector - Better infrastructure for
outsourced work. Increase from \$200B
now

⑥ Service delivery - Telemedicine,
Teleconferencing, Tele-education
become possible.

Challenges in 5G Rollout

① Investment - Need \$60-\$70B in
cash-outlaid telcos after AGR
ruling

② Infrastructure creation - only 20%
fibre backhauling done now, need
at least 80%

③ 4G rollout not finished - still in
remote areas.

④ Higher Bandwidth - 5G has higher
frequency, absorbed more quickly
hence, need more towers.

⑤ Absence of test bed technology -
Huawei ban worldwide caused
chain effects

Paulraj committee suggested a three
phase 5G rollout in India - initial
tests now, and full rollout when
its tech becomes cheaper after
"US-China 5G war" ends.

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?

Quantum technology uses quantum principles of entanglement and superposition in everyday tech, which is beneficial to mankind.

presently, it has been suggested only for quantum computers (eg: Sycamore) but it has wide applications.

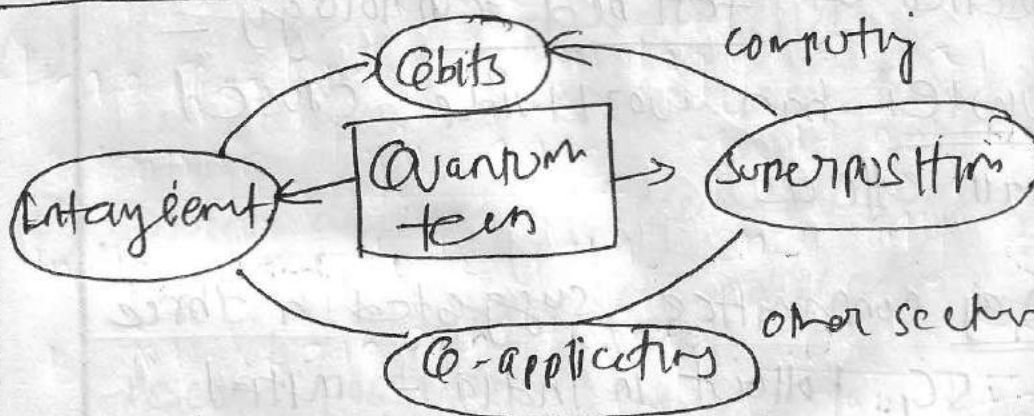


fig: Quantum tech principles

Applications

- ① Cryptography - use of Quantum key Distribution (QKD) for

Cryptography.

eg: China's Micius satellite.

② Quantum-medicine - using its
properties for multi-phased absorption

③ Quantum physics - "particle physics"
like in CERN to identify
subatomic particles

④ Quantum-particles - with special
properties due to large surface
area.

Challenges

① Lack of practicality - Technologies
only in theoretical phase.
eg: Quantum computers not fully
developed.

② Special needs - Qubits and other
quantum properties stable only at
cryogenic temperature (0 Kelvin)

- ③ High cost involvement in developing quantum tech, due to time & energy involved.
- ④ Absence of Mass application - like Green Revolution.
- ⑤ Potential Disruption - QKD can render all encryption algorithms like RSA useless, creating challenge in banking, digital economy etc.

Hence, quantum technology as a "scientific high-horse" should not be

India's immediate aim, since only QKD is for research. However, QKD can be developed now for deployment for space-secure comm.

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।

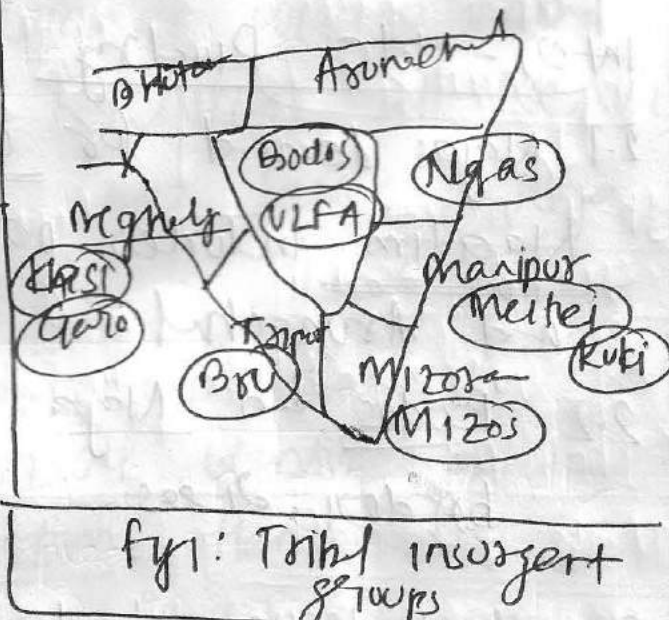
India's North-East region (NER) has over 100 militant insurgents, on tribal and regional identities, most importantly the Naga group (NMPG). However, their peace talks ~~are~~ have created a number of challenges.

Insurgent groups giving up violence

① Mizos in 1986 under Mizo Accord.

② Shillong Accord with Ngas.

③ Bodo land Accord for greater power to Bodo Territorial Council (BTC)



④ Naga Peace framework with NNPC

Challenges that could create hurdles

① Inter-tribal Rivalry

1.1 India-BN Peace Talks for
"four corner Agreement" has generated
resentment in Mizos

1.2 BN-Tripuri conflict a getting
permanent status.

② Inter-state Rivalry

2.1 Nagas demand for Greater
Nagaland includes parts of Manipur
and Arunachal.

2.2 Bodos and Naga rivalry over
border areas.

③ Boondoy Issue - Jorhat between
Assam and Mizoram keeps popping
up in multiple talks.

- ④ Talk detailment - over Yeathabo
(Nga fig) by NNPK, possible.
- ⑤ Surrendered groups threat -
Surrendered ULFA (SULFA) get
surrounded and attacked by ULFA
members.
- ⑥ underplaying beryali military in
North-East
- ⑦ Conflicting demands with a tribal
peace talk - NSCN(IM) and NSCN(IE)
disagreements over terms in Nga
Accord

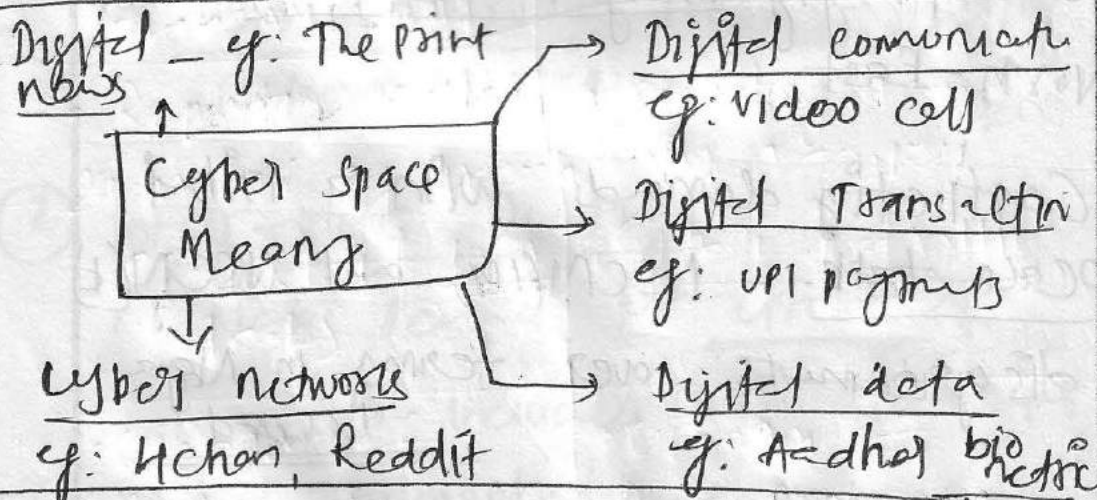
Hence, this issue is complex due to
interplay of tribal identities with
regional deprivation. Hence, there is
a need to have wider talks where
groups also negotiate among themselves.

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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।

India ranks 3rd most vulnerable on Symantec Internal Security Threat Report to its cyber-space, losing around Rs 1.25 Lakh crore annually.



key vulnerabilities in India
cyber space

State Threat

1. Advanced Persistent Threats (APT)
such as Russian Hackers
2. Mass surveillance - eg: PRISM + US

Non-state Actors

1. Cryptjackin - Smurfing
2. Spyware - to capture or steal info.
eg: FinSpy, Black rock.
3. Ransomware - Encrypt data for money.
eg: WannaCry, NotPetya.
4. Social Engineering techniques
eg: honeypotting like in Mahmud
spy case
5. Identity Theft - Skimming, Phishing,
Smishing etc.
6. DDoS Attack - Denial of service by
botnets. eg: Sapashi

structural factors

1. Go2 of India's communication tech
is Chinese, can cause "Back
window into Transnistria"
2. lack of centralized response system
3. lack of digital training to Indian
officials. eg: Aadhar info leak.

framework for India cyber
security policy

Private player

Government

synergy on
info sharing

← → synergy on
confidentiality

• Allow for
flexible data
transmission

• Allow for data
localization

• Reporting within
24 hrs of a breach
eg: Justdial 10Cr
leaks

• statutory regime
with regular
cyber patrolling

• Creation of
self regulating
mechanism

• Creation of
Data Protection
Impact Agency
(DPIA)

India should also join Budapest
Convention, and \$10 for cyber
security as "cyber shield to
Digital revolution".