

89

**GENERAL STUDIES - PAPER III**

Time Allowed: 3 hrs.

Max. Marks: 250

Q.	Marks	Instructions to Candidate
1.	5½	<ul style="list-style-type: none"> <li>• There are 20 questions.</li> <li>• All questions are compulsory</li> <li>• The number of marks carried by a question is indicated against it.</li> <li>• Answer the Question No. 1 to 10 not more than 150 words, whereas Question No. 11 to 20 should be answered in not more than 250 words.</li> <li>• Answers must be written within the space provided.</li> </ul> <p>Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.</p>
2.	4½	
3.	3	
4.	4½	
5.	0	
6.	2	
7.	3	
8.	5	
9.	5½	
10.	3	
11.	8.	
12.	6½	
13.	6½	
14.	5	
15.	- 5½	
16.	5	
17.	7	
18.	7	
19.	3	
20.	4½	

1. Invigilator Signature \_\_\_\_\_

2. Invigilator Signature \_\_\_\_\_

Name Kumar Biswaranjan

Roll No. \_\_\_\_\_

Mobile No. \_\_\_\_\_

Date \_\_\_\_\_

Signature Biswaranjan

## REMARKS

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SECTION - A

Q1. Recently, the Union Government announced new hydrocarbon exploration and pricing policy. Examine the merits and demerits of this policy. (10 Marks)

Hydrocarbon exploration and ~~pricing~~ licensing policy (HELP) introduced by government will replace the old NELP (new exploration and licensing policy) and has following features -

①

Freedom in pricing and selling

Open acreage policy

HELP

Uniform licensing for all hydrocarbons

①

Revenue sharing model

instead of profit sharing.

5 1/2

Merits -

① Revenue sharing model will decrease the leakage, reduce the accounting practice to show a reduced profit, increase revenue of government.

② Freedom of pricing and selling will give the private players option to explore and sell in international

Remarks

market.

③ Uniform licensing will reduce government intervention as same license will be useful for Coal Bed methane, shale gas.

It will give better profit to industry.

④ open acreage will increase ease of doing business.

Administrative delay - import duties etc

elements -

① Revenue sharing from day 1 will make private sector unprofitable and thus it will reduce private investment.

② earlier NELP blocks are not upgraded to HELP policy.

③ Revenue sharing may not be a good option in a sector where exploration is experimental and investment hungry and long term.

conclusion or way forward ??

Answer incomplete

Remarks

Good part - structuring, concept clarity.  
Bad part - → incomplete answer

Q2. A range of issues relating to procurement, storage and distribution of food grains is not only deeply flawed in its reading of the situation on food security, but also short on facts. Discuss in the light of Shanta Kumar Committee recommendations. (10 Marks)

Shanta Kumar Committee was constituted to study the public procurement system by Food Corporation of India (FCI). It has pointed towards a range of issues.

45

1

### procurement issues

- Only limited to few food grains (rice, wheat)
- creates imbalance in TPDS and ~~consumption~~ consumption pattern and production pattern.
- FCI is not equipped to handle all procurement of all states.

12

~~recommendations~~ recommendations → to allow states having good procurement infrastructure (Chattisgarh, Odisha) in procuring while FCI should focus on other states.

### Storage issues

- 20% of the FCI storage are lovels and plinth (CAP) where it is only covered ~~by water~~ and left.

Remarks

- Shortage in number of warehousing and storage infrastructure

recommendations → ~~also~~ give the storage storage to CWC (central warehousing commission), SWC.

- Use private player's storage. (BEG <sup>Sch</sup>)
- allow NWR (negotiable warehouse receipt)
- reduce CAP to zero.

distribution →

- The transport facilities are ~~inefficient~~.
- leakages and corruption.
- modern technology not used.
- huge waste of food grains.

recommendations

- use inland navigation and waterway
- use containerization
- focus on preservation and reducing wastage.
- use ICT, computerized system.

Remarks

conclude it.

introduce in proper way.

otherwise structured Answer

Q3. Critically examine the emergence of AI-powered cyber weapons as the weapons of next cold war. (10 Marks)

Artificial Intelligence has raised a debate on usage of AI powered autonomous ~~cyber~~ <sup>cyber</sup> machines in cold war.

Potential of AI-powered <sup>cyber</sup> machines are much greater than conventional ones and damage will be much more because -

① Everything is connected to internet and cyber system.

eg: electricity grid, critical infrastructures, railway signalling, power stations, atomic energy stations.

↳ Those can be targeted by cyber AI

② The anonymity of cyber AI makes it more prone to misuse

③ Usage of Stuxnet by America on Iran nuclear plant raises such questions.

④ countries like China, Russia are building cyber tools as offensive measures.

Remarks

③  
11

AI will increase the power of cyber tools because -

① It will learn from past mistakes and more datapoints.

② AI can surpass human intelligence thus cyber security measures taken by human minds may not be enough.

③ AI can be exploited by any powerful countries also because it doesn't need heavy investment or heavy technology like Nuclear weapons.

④ AI can be stolen easily than other tools like nuclear bombs.

Similarly AI can be used in defensive operations in protecting cyber infrastructures also. Thus we need to move ahead and invest in AI, cyber security more. NITI action strategy on AI will be the guide.

Remarks

→ see the demand

Future Cold war + emergence of cyber weapon  
put some examples.



Q4. Briefly introduce various intelligence agencies in India and their major functions.

(10 Marks)

Various Intelligence agencies of India are -

RAW (research and analysis wing) → does external intelligence gathering and external operations outside India

also with

IB (intelligence bureau) → does intelligence operations inside India on Indian citizens.

CBI (central bureau of investigation) is the major investigating body of central government.

4 1/2

- established by DPSE act.
- is the coordination body of India for Interpol.

NIA (National investigation agency)

- established by NIA act 2008
- major investigation agency to investigate high value crimes, terrorist activities.

DRI (Directorate of revenue intelligence)

- under CBEI.

Remarks

- does investigate smuggling issue.

Directorate of intelligence in Income tax

- India's coordinating body for  
Financial Intelligence task force (FATF)

Directorate of Naval intelligence, Directorate of air intelligence works under Navy and Air force respectively.

NTRO (National technical research organization) works under PMOS and investigates technical matters.

Narcotics ??

Remarks

introduction and conclusion  
missing  
Rest - fine

Q5. Discuss major amendments in the Prevention of Money-laundering Act, 2002, through Finance Act, 2018, to make it more effective. (10 Marks)

Prevention of money laundering Act 2002 is enacted to counter money laundering. Enforcement Directorate (ED) is the nodal agency under PMLA act.

Remarks

concept lacking;  
→ see model answer

Remarks

Q6. The concept of urban development of infrastructure in India cannot be separated from rural infrastructure development. Explain in the light of AMRUT, Smart Cities, and RURBAN concept of rural development. (10 Marks)

Urban and rural areas, economies are interlinked and support each other. Thus urban and rural development go hand-in-hand.

### RURBAN

Rurban mission aims at creating clusters of RURBAN areas as drivers of growth. It aims at

- infrastructure development
- cluster based development
- increasing linkages to nearest urban areas and RURBAN clusters
- provisioning all basic facilities at RURBAN cluster.
- bottom up approach of development involving local PRAIS.

### Smart Cities

aims to develop 100 SMART CITIES in India. It has many components that need efficient rural-urban linkage.

Remarks

- context missing.
- see the demand of the question

- Smart cities need backward and forward linkages with peri-urban and rural centers to provide basic services, amenities, fuel.

- Smart cities with increased infrastructure ~~not~~ aims at preserving local culture. It will increase linkage rural areas. Rural ~~not~~ can be exported to urban areas.

### AMRUT

aims at creating 500 Amruti cities with better infrastructure like municipal solid waste management (MSW), solid waste treatment plant (STP), increasing green cover, basic transportation infrastructure.

- AMRUT will create urban cities that will act as hubs of rural development by hub-spoke model.

As Joshi-Judge Ahluwalia Committee pointed out Rurban-urban development must be done at the same time for greater convergence.

### Remarks

Question is not about schemes rather than it is about why there should be rural infra develop<sup>ment</sup>

Explain  
this  
is  
the  
crux  
of  
the  
Answer

Q7. While highlighting the significance of celebrating Earth Day, discuss the major components in the theme of Earth Day 2018. (10 Marks)

Earth day is celebrated to

- celebrate the nature and mother earth
- awareness generation on environment
- advocacy of preserving environment.

Significance of earth day -

- ① creates sense of ownership of our environment.
- ② large scale participation sensitizes people on environmental issue.
- ③ participation and support by multiple countries, UN gives greater credibility to the voices.
- ④ increases awareness among masses
- ⑤ acts as a reminder on the carrying capacity of earth.
- ⑥ celebrations including afforestation drives, cleanliness drives helps in environmental protection.
- ⑦ newer issues like plastic pollution

Remarks

for most cities.

etc can be ~~to be~~ raised on earth day platform.

Earth day celebration is a reminder that we haven't inherited the earth from our ancestors but we have taken as a debt from our next generation, thus we need to preserve it.

What about Earth Day 2018?

Remarks

- half question answered



- Q8. As part of its commitment under the Montreal Protocol, India has launched the second phase of its programme that aims to eliminate the use of hydro-chloro-fluoro-carbons (HCFCs). Examine the challenges involved in eliminating HCFCs from India and suggest some remedies. (10 Marks)

Montreal protocol and Kigali amendments to its focuses on reducing the Ozone depleting gases and reduction of HCFC (a potent green house gas). India has ratified Montreal protocol and Kigali commitments to reduce HCFC usage.

challenges involved are -

- ① The technology that provides alternatives to HCFC are more expensive for industries.
- ② Indian industries need significant investment in production-line changes, product design changes to adopt.
- ③ Lack of fiscal incentives by the government to industry.
- ④ Existing technology needs to be modified to suite peculiar Indian

Remarks

environment.

- ⑤ lack of research and development
- ⑥ lack of awareness among masses on the HCFC issue
- ⑦ India market being very price sensitive may not promote high priced good technology.

### Measures +

- ① Taking large scale effort (e.g. LED scheme by EEEL) on popularizing and creating demand for ACs, refrigerators ~~was~~ using alternate technologies.
- ② Technology transfer from advanced ~~start~~ countries.
- ③ giving fiscal incentives to industry.
- ④ greater investment R&D
- ⑤ more industry-academic-government collaboration.
- ⑥ Research from CSIR, DRDO must be shared with private sector for a large scale production.

Remarks

Q9. What do you understand by germline editing? Discuss the ethical, social and regulatory issues that human germline editing raises. Also, highlight how it is being regulated in India and countries across the world. (10 Marks)

Germline editing is editing the genes by CRISPR-CAS9 and other techniques at the embryo level. (sperm and egg level). The germline editing not only alters the genetic functions at the current generation, but also for future generations. It will help fight certain hereditary diseases.

### Ethical issues

- ① designer babies where parents ~~get~~ select set of traits for their children
- ② changing the human genome by introducing animal/plant genome, they creating hybrid animals.
- ③ changing the whole hereditary line is considered immoral.

### Social issues

- ① changes in society that can be brought by germline editing is uncertain.
- ② continuous editing may change the homo sapiens into another creature.
- ③ poor, marginalized section will not have

Remarks

- = access to such technologies. Thus a rich person can increase his/her efficiency, knowledge, aptitude by ~~set~~ genome editing and poor will be deprived. The competition will be biased in favor of the rich.

### Regulatory issue

- ① Too difficult to regulate
- ② Strict regulation may make it an underground business.
- ③ Lack of capacity and expertise of regulatory bodies.
- ④ International regulation and cooperation will be difficult.

### Regulation in India and world:-

- ① few countries selectively allow the technology in case of rarest disease.
- ② there are no international body controlling it.
- ③ In India this is banned.

Remarks

Q10. Highlight the prevalence of drug abuse in India? Discuss the various measures taken by government to curb the drug addiction in country. (10 Marks)

Drug abuse is increasing in Indian states like Punjab, North Eastern States, Urban areas.

- Punjab has high drug addiction level due to proxy war by Pakistan, Golden Crescent.
- North east drug abuse is increasing due to easy availability from Myanmar via smuggling, trans national criminal ~~organisations~~ organisations.
- Drugs like cold pills, WABA, WY, Bhul Bhulaiya are increasing their presence in India.
- Often drugs are packaged as cold tablets and have high addiction level.

Measures taken by government -

- ① Punjab government has ~~pro~~ proposed strict criminal punishment for drug dealers, middlemen.
- ② ~~Govt~~ advocacy camps and awareness camps

Remarks

③ using religious institutions, elders to advocate children, youth.

④ Arogyavani of Karnataka provides 24x7 consultation process to drug addicts.

⑤ Increased ~~to~~ support to drug addicts reform centers.

⑥ Taking strict action against drug dealers under acts like UPCOCA, MCOCA etc.

Remarks

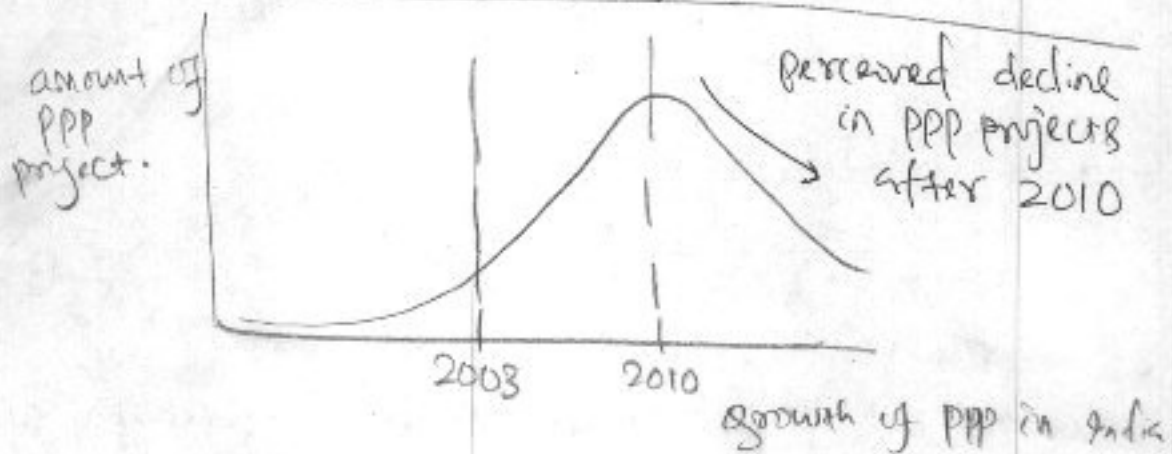
## SECTION - B

Q11. There is an urgent need for India to get infrastructure financing, however, the current investment model of PPPs is poorly designed and needs restructuring. Discuss the issues plaguing the success of PPPs with respect to stalled projects, risk management, governance & institutional capacity. (15 Marks)

PPPs are joint partnership between government and private sector to share financing risk, operation/management risk, revenue risk.

Need for India to get PPP ~~for~~ model →

① Jshar Judge Ahluwalia committee has said that India need \$40 trillion in two decades for infrastructure financing. Thus we need private partnership due to <sup>inadequate</sup> ~~poor~~ fiscal strength of government.



We need restructuring of PPP project to revive the investment.

Remarks

## Issues faced

- ① Stalled project issue
  - Ⓐ due to delay in land acquisition, environmental clearances
  - Ⓑ Lack of financing facilities to PPP projects
    - Poor health of banks after ~~tax~~ NPA issue
    - Lack of vibrant corporate bond market
  - Ⓒ Policy paralysis at government level after 2G scam, coal gate scam
  - Ⓓ Some projects became unviable after technological changes in the sector, thus need restructuring.
- ② risk management issue
  - Ⓐ Obsolescing bargaining: private sector loses bargaining power after project started.
  - Ⓑ Lack of proper risk management between govt. and private.
  - Ⓒ No option for change in risk management due to sectoral, external economy issue in a long run project.
- ③ Governance issue
  - Ⓐ Lack of PPP review committee and PPP

Remarks



adjudication tribunal as recommended by Kelkar committee.

- ① delays at government level in clearances.
- ② projects are approved in ad-hoc manner without long term strategy.
- ④ institutional capacity
  - ② reduced interest of private players in PPP
  - ③ The proposed 3P India institution to promote capacity building in PPP has not ~~done~~ <sup>created</sup> yet.
- ⑤ other issues like financing issues

Way forward

As Kelkar panel recommended there should be

- ① ~~poor~~ poor risk balance between government and private sector.
- ② institutions like 3P India, Infrastructure PPP projects review committee, Infrastructure PPP adjudication tribunal should be set up.
- ③ ~~poor~~ corporate debt market as recommended by H R Khan committee. This is used by all developed countries in financing infrastructure.
- ④ scope for risk management at later stage owing to the structural changes in the sector.

Remarks

Q12. There is an overdrive by the government and India Inc. to link 12-digit Aadhaar with verification process of various schemes and realize Digital India dream faster. However, increased incidents of cyber frauds and data-theft highlight lack of preparedness. Analyze. Also, suggest solutions to handle these issues. (15 Marks)

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

Aadhaar as money bill has paved the way for use of Aadhaar number in various schemes for beneficiary identification purpose. This will increase digital penetration and will help in realizing a digital India.

Why overdrive by government in Aadhaar adoption

- ① Aadhaar with DBT has saved several ~~crores~~ crores of rupees for govt.
- ② It has potential to reduce leakage and reduce inclusion/exclusion errors.
- ③ will deepen digital technology adoption
- ④ quick and error-free beneficiary verification process
- ⑤ reducing middlemen thus reducing corruption

However certain issues persists such as -

- ① increasing incidents of cyber frauds and data theft due to -
  - ⊖ poor cyber security
  - ⊖ lack of cyber literacy/digital literacy

Remarks

- ① ~~poor~~ ~~and~~ outdated infrastructure that is easy to exploit.  
 e.g: Banks use ~~poor~~ old windows that is no longer supported.
- ① rise of cyber crime globally.
- ② lack of awareness among masses who are illiterate in the first place.
- ① poor cyber security measures taken by the financial institutions.  
 e.g: HITACHI - Yes bank ATM data theft.
- ② Lack of 24X7 power connectivity and ~~internet~~ connectivity makes use of cash unviable.
- ③ often schemes are DBT-ized without making them suitable for online adoption. No process reengineering is done.

Solutions to handle such issues -

- ① Increasing cyber/digital literacy along with financial literacy.  
 e.g. PMGDISHA for digital literacy.
- ② Increasing cyber security measures at all level. from ~~into~~ POS point, banks to government databases.

Remarks

- ③ strictly adhering to National Cyber Security Policy 2013.
- appointing Chief Information security officers at banks.
- ④ adopting global best practices and new technologies like - air gapping, e-discovery, encryption, OTP.
- ⑤ Mandatory process - reengineering.
- ⑥ Ensuring basic power and internet connectivity
- e.g. DDU-Gramin Bidhyutikaran Yojana, IDPS, Bharat Net.
- ⑦ Recent measures taken by UDAI
- virtual ID
  - limited KYC
  - facial recognition
  - ~~2048 bit encryption~~ 2048 bit encryption
- ⑧ further strengthening Aadhaar infrastructure via legal backing and making data theft legally punishable.

Remarks

conclude it.

 Rest time - Give some faults about  
 Digital India dream

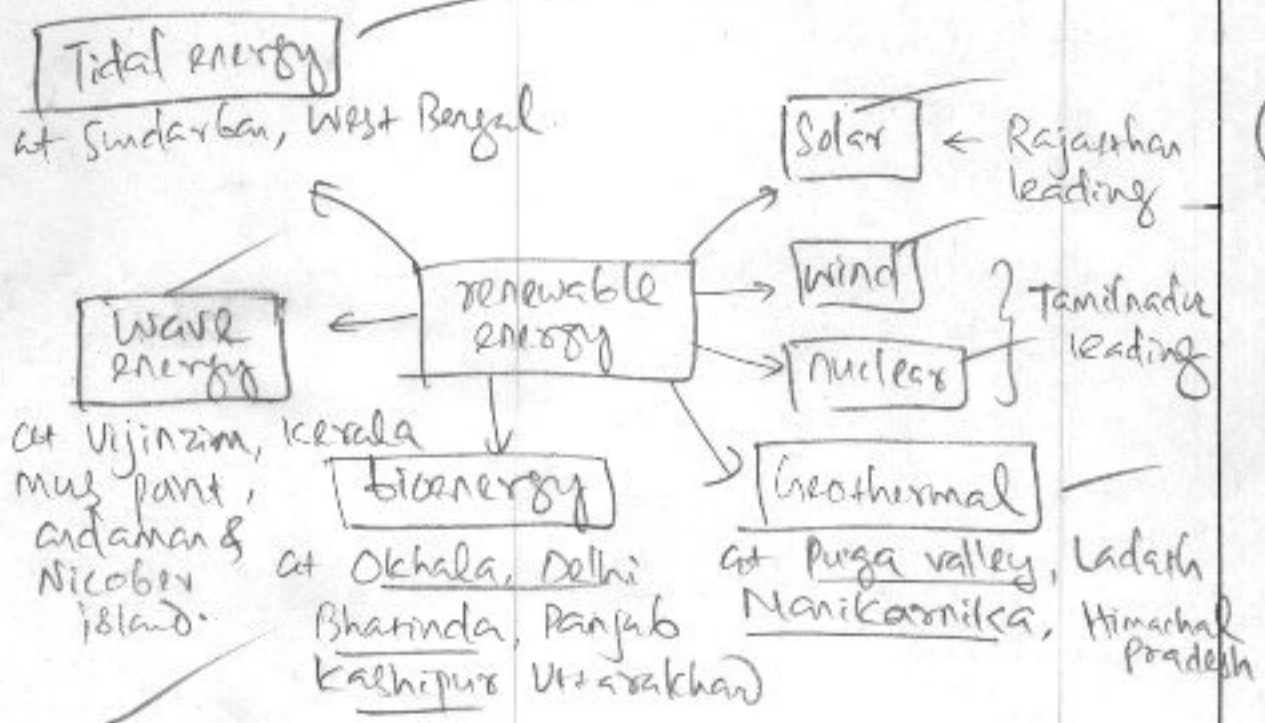
Q13. The World Bank has observed that India is emerging as a frontrunner in the fight against climate change. It has noted that India is gradually replacing coal energy with solar power as a source of energy. Elaborate. (15 Marks)

6/2

India has committed at Paris climate deal to reduce the emission intensity of economy by 30-33% of GDP by 2030. For that it had adopted the ambitious target of 175 GW of renewable power by 2022. World bank has appreciated the steps and termed it as ~~for~~ frontrunner.

(1/2)

India's steps towards renewable energy adoption has many dimensions —



①

Remarks

India has taken many steps towards solar energy powered economy —

- ① Targeting 100GW by 2022
- ② Solar-wind hybrid plants
- ③ Net metering to encourage roof top solar
- ④ Jawaharlal Nehru National Solar Mission.
- ⑤ National Institute of solar energy (NISE) for research, development and capacity building.
- ⑥ encouraging roof top solar, canal top solar, solar heater
- ⑦ Recent budget introduced KUSUM scheme to encourage farmers to use solar powered pump set and sell additional solar power to grid.
- ⑧ providing tax incentive, fiscal incentives to ~~the~~ solar industries.

At the same time it is trying to reduce the coal ~~imp~~ footprint of economy via

- ① National draft ~~energy policy~~ electricity plan recommended no additional coal

Remarks

powered electricity station in 2022-27.

- ② ~~Adopting~~ higher end technology like super critical technology to increase efficiency of coal and reduce emission.
- ③ ~~Reducing~~ the share of coal in energy basket.
- ④ ~~Shutting~~ down inefficient ~~coal~~ coal powered plants.
- ⑤ ~~Recent~~ Renewable purchase obligations (RPO) and Renewable generation obligations (RGO) makes mandatory to purchase/generate ~~a~~ certain percentage from renewables.

With the above India is on the right track to fight climate change.

Remarks

Q14. Ending poverty and stabilizing climate change will be two unprecedented global achievements and two major steps toward sustainable development. Critically discuss the impact of climate change on poverty. In regard to this, suggest some measures.

(15 Marks)

Climate change and poverty reduction are two major goals adopted by sustainable development goals (SDG).

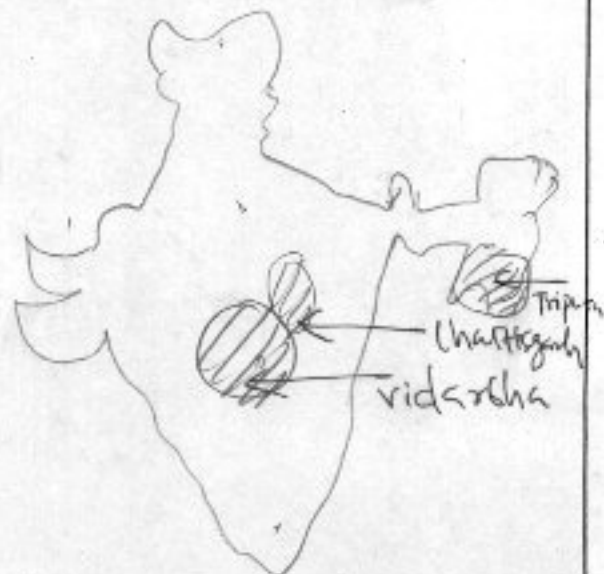
India with 20% poor population (Tendulkar) and high scope of being in the vulnerable zone of climate change impact need to address both.

Climate change and poverty

① World bank has estimated the climate change hotspots in India, ~~and~~ those are going to be highly affected by climate change.

These are the most vulnerable parts of India and inhabited by many poor.

② Climate change will result in ~~more~~ rapid spread of



Climate change hotspots: WB

Remarks



diseases like malaria, dengue that will affect poor.

- ③ Urban poor will be most affected by climate change due to heat island effect, poor urban infrastructure, unhygienic environment, rapid disease spread.
- ④ Rural poor will be affected by
- decreasing access to safe drinking water
  - lack of health facilities
  - rising heat strokes
- ⑤ Climate change will ~~also~~ decrease agricultural productivity (of rice, wheat) and endanger food security. Poor will have decreased food security. Hunger, malnutrition will ~~be~~ increase.
- ⑥ Climate change will increase natural disasters (floods, cyclones, landslides, avalanches), poor without resources will be most affected.

Remarks

Measures that can be taken -

- ① climate change - mitigation measures specifically targetting poor.
- ② increasing food security by investing drought resistant varieties, increasing productivity, access, affordability.
- ③ providing health care to remotest areas
- ④ increasing hygiene in urban areas and providing them better infrastructure.
- ⑤ focusing on climate hotspot areas like Vidarbha, central MP, Chhattisgarh and taking all round approach.
- ⑥ increasing resources available to the poor like Common property resources (CPR).
- ⑦ targetting malnutrition and hunger and reducing them.

Remarks

Q15. An emissions-reduction approach to fight global warming is not enough. Alternative solutions involving climate engineering might have to be deployed sooner than we think. Critically examine the statement. Also, discuss climate engineering. (15 Marks)

Focus on it →

Current approach to fight climate change focuses majorly on emission reduction so as to limit the rise of temperature within 2°C of pre-industrial level. However experts have suggested that emission reduction alone may not be ~~effie~~ enough and we need climate engineering.

Various climate engineering solutions are -

- ① Carbon capturing and storing at safer places or using in industrial activities like methanol production.
- ② Placing a huge mirror in space to reflect the sun rays thus reducing the temperature.
- ③ Releasing iron into oceans to increase algal boom that will store CO<sub>2</sub> by photosynthesis.
- ④ Artificial cloud seeding to increase rain and thus removing some carbon dioxide by dissolved dissolving in water.

Remarks

②

5/2

1

explain

Discuss

climate

engineering is good part

⑤ Creation of artificial leaves that will imitate the photosynthesis process and store away  $\text{CO}_2$ .

### Benefits of climate engineering

① quick solution

② can be applied in large scale to reduce  $\text{CO}_2$  footprint..

③ It will remove major percentage of  $\text{CO}_2$  from the atmosphere.

④ It will boost technological innovation thus better, efficient, secure technologies might arrive later.

⑤ Easier to deploy the solutions.

⑥ It doesn't need long time to balance the climate.

⑦ It will not only limit the temperature within  $2^\circ\text{C}$ , but can drive the temperature to near industrial level. thus It has potential to decrease the temperature.

Remarks

Certain issues highlighted are -

- ① The negative effects of technologies are not known fully.
- ② Artificial systems to balance the climate will not be sustainable ~~not be~~.
- ③ ~~Such~~ Such technologies might give a free hand and an excuse for more pollution.
- ④ Efficiency of technologies are questioned. ①

Therefore we need to balance both emission targeting and climate engineering.  
 Climate engineering solutions can be taken as pilot projects and few non-harming technologies should be deployed to fight climate change.

→ see the demand of the Q and write specific about the statement.

→ Don't be generic in approach.

Remarks

Q16. What are Coastal Regulation Zones? Government has recently proposed changes in CRZ regulations through draft Coastal Regulation Zone (CRZ) Notification, 2018. Highlight the salient features of the same. What are the concerns toward new changes? (15 Marks)

⑤  
 Coastal Regulation Zones are zonation of coastal areas to regulate the development, to preserve the ecological balance. The Coastal Regulation Zone rules are passed under Environmental Protection Act 1986.

Coastal regulation zones are divided into multiple parts like CRZ-I, CRZ-II, CRZ-III, IV, V for differential regulation of different areas.

Government has established Sailesh Nayak committee to review CRZ rules and recommendations of the committee are accepted in the draft CRZ notification 2018.

Remarks

### Salient features are -

- ① allowing development in CRZ zones.
- ② reducing the CRZ regulation to 100m from the high tide line from previous 200m.
- ③ More liberal CRZ regulation for achieving development potential of coastal region.
- ④ Projects of substantial national interest should be excluded from CRZ rules.

### Issues and concerns

- ① May allow indiscriminate development at the expense of ecological balance.
- ② the concerns of local communities like (fishermen) are not given adequate priorities.
- ③ exemptions granted to projects might engulf many projects that are not essential.
- ④ National interest is not <sup>clearly</sup> defined and there is scope for ambiguity.

Remarks

The ~~best~~ rules must balance the ecological concerns and developmental needs of the local communities. Greater debate and discussion on the issue is essential.

Remarks



Q17. Highlight the challenges being faced by biotechnology sector in India. Also, discuss how the National Biotechnology Development Strategy (2015-2020) which aims to establish India as a world-class bio-manufacturing hub. (15 Marks)

Biotechnology<sup>(BT)</sup> is a field that uses modern technology (Gene editing) on biological objects to get derived effect.

Challenges faced by BT sector in India

- ① Lack of skilled manpower.
- ② Lack of research and development that are cutting edge.
- ③ lack of investment in BT sector by public and private both.
- ④ The output of BT sector is not reaching the poorer section.
- ⑤ The developmental issues of significant developmental concerns like (climate change, poverty reduction, hunger, malnutrition, neglected tropical diseases) are not addressed by the BT sector properly.
- ⑥ There is no significant translation of research into products.

Remarks

- ⑦ Government incentives (taxation and fiscal) to BT industry is ~~inadequate~~ inadequate.
- ⑧ Lack of Industry-academic collaboration
- ⑨ Lack of quality research and output
- ⑩ inadequate number of center of excellences and research labs.

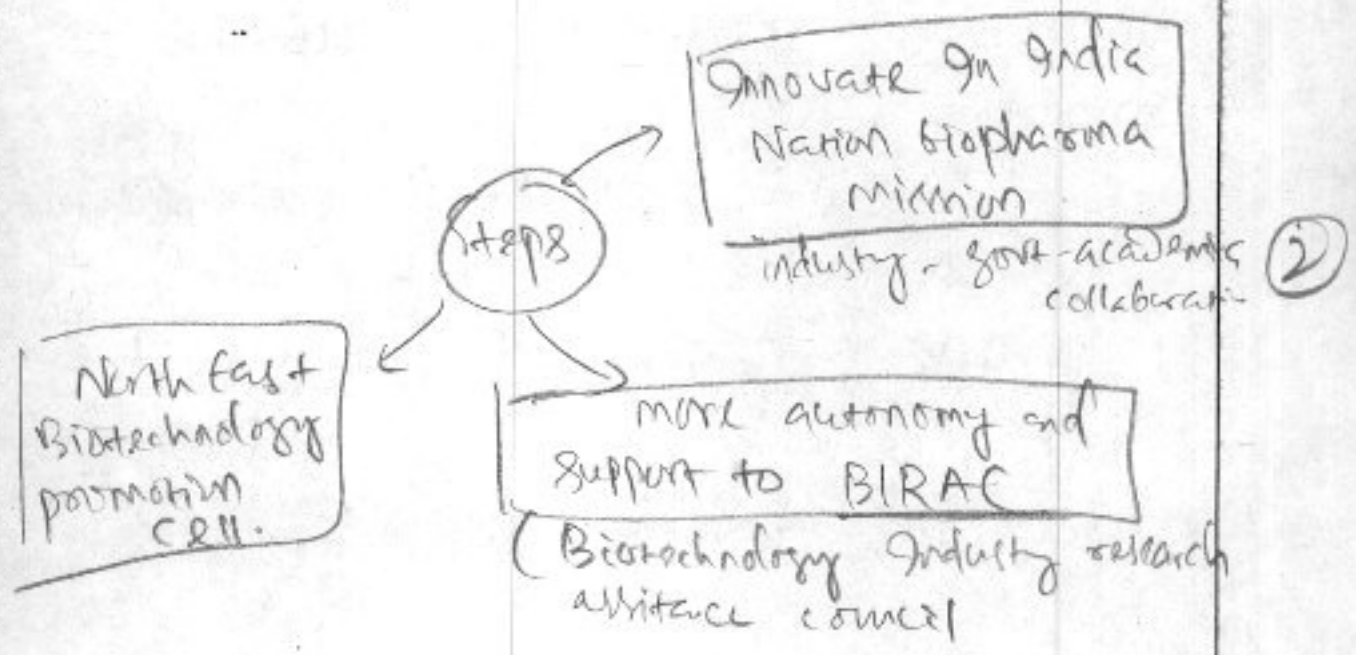
### National BT Development Strategy (2015-20)

aims to establish India as a world class bio-manufacturing hub by -

- ① increasing public/private investment in the sector.
- ② Conducive government policies, schemes, tax incentives to facilitate growth of industry.
- ③ Providing skilled manpower by training and education.
- ④ Industry-academic-government collaboration.
- ⑤ Establishing center of excellences and linking them to industries.
- ⑥ Encouraging export opportunities.

Remarks

Several steps taken recently are →



The above steps are in right direction in promoting Biotechnology in India.

Remarks -

Q18. Leveraging Japanese expertise in robotic manufacturing and channeling local software talent would allow India to come to terms with a fast-changing global economic scenario, where automation will rule the roost. Analyze. (15 Marks)

⑦ Industrial revolution 4.0 timing to transform the manufacturing sector and industrial output significantly by leveraging automation, robotics, big data, Internet of things. Thus India need to adopt and embrace industrial revolution 4.0.

Current issues in India -

- ① lack of ~~more~~ stable and large manufacturing sector, as we jumped directly to services.
- ② poor research, investment, capacity building in manufacturing industry.
- ③ large scale labor & are unskilled (only 2-3% skilled : UNDP) and needed to adopt the changing times.
- ④ India needs to embrace automation in order to move up in global value chain and increase exports.

Remarks

Automation <sup>is a</sup> threats to

- largescale unemployment
- poor skill of Indian labors.
- growing services sector as artificial intelligence is taking their place.
- poor industrial base of India

Japan and India : collaboration for future

- Complementary nature of economy
  - Japan's aging population is complementary to youth and demographic dividend of India.
  - Japan's expertise in ~~man~~ manufacturing sectors and India's service sectors
- both are aligned in terms of foreign policy and national interest.
- good relationship enjoyed by both in recent time.

Collaboration in ~~man~~ robotics manufacturing will be beneficial to India →

① Japan is world leader in robotics.

② When combined with local software talent pool, we can create modern automated industry for next generation.

③ India's ~~robot~~ expertise in software can ~~code~~ efficiently handle the quality Japanese hardware.

Thus India-Japan collaboration will be a win-win for both and essential for India to address the future automation challenge.

Remarks

Q19. What do you understand by precision farming? It is said that future revolution in agriculture is going to come from precision farming and micro-irrigation can be the stepping stone towards achieving the goal of making Indian farming sustainable, profitable and productive. Discuss. (15 Marks)

Precision farming is a agricultural technique where artificial intelligence is used to

- monitor each specific plant?
- provide inputs required by that specific plant according to its growth and environment
- pest control at plant level
- Special focus on increasing productivity of each plant
- a microscopic view and analysis of each and every plant.

need proper underlining

2

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see the grid

sample

Precision farming will revolutionise agriculture

- ① greater <sup>attention</sup> ~~attention~~ at plant level will increase productivity of each plant. because
- ② pest control will be much more effective.
- ③ diseases can be stopped from spreading at the very beginning.
- ④ sufficient amount of fertilizer, input will ensure better ~~the~~ soil health

1

Remarks

write - How precision farming is going to help Indian agricultural!

management

⑤ Better post harvesting and processing will reduce post harvest losses.

Precision farming and micro-irrigation have potential to make Indian farming sustainable, profitable and productive because -

① Micro-irrigation will help in efficient irrigation, reduce the water wastage and evaporation losses.

② Micro-irrigation will optimally allocate the water resources to all farmers thus increasing productivity.

③ Precision farming will ensure productivity ~~increasing~~ increase due to the above said reasons.

④ Micro irrigation and precision farming have the potential to reduce the losses, increase remunerative prices and price realization by farmers and makes it profitable.

Remarks

Explain with specific examples rather than writing General.

General comments

①



However certain challenges exist, are -

- ① poor literacy level will be a hurdle in technology adoption.
- ② It will need huge investment and funding ~~from~~ from public endeavor.
- ③ Precision farming is too expensive to be ~~adopted~~ <sup>for adoption</sup> by small/marginal farmers.
- ④ the reduced land holding size of (83% small and marginal farmers) will reduce efficiency of such technologies.

The above issues must be addressed and the potential of precision farming and micro-irrigation must be exploited.

Answer structured

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Remarks

→

Q20. Food subsidy has increased six-fold over the past 10 years. In light of this, discuss the challenges in the effective implementation of Targeted Public Distribution System (TPDS) and alternatives to reform the existing machinery. (15 Marks)

① Targeted Public Distribution System (TPDS) is under National Food Security Act that aim to provide

① subsidized food grain to 67% of the Indian population. The food subsidy bill of government has increased a six-fold over the past 10 years and breached the 1.5 lakh crore level.

Issues of TPDS -

① As Shanta Kumar Committee on Food Cooperation of India pointed out, there are multiple issues at FCI level.

② FCI procurement is limited to few crops like rice, wheat. Thus TPDS only delivers those not other nutritious ones.

③ There are widespread corruption and leakage at FCI level.

Remarks

- ② The price of procurement at MSP level has increased over the years but the common issue price of TPDS has remained same. This fact subsidy increased.
- ③ TPDS is limited to food grains and doesn't deliver protein, vitamins, pulses. ①
- ④ Lack of awareness among people ~~lead~~ led to leakage at fair price shops.
- ⑤ TPDS distorts the market structure.
- ⑥ TPDS food grain is sold by the beneficiaries in the market.
- ⑦ inefficient storage, distribution leads to ~~to~~ huge wastage.

Other alternate systems are — —

- ① Introduced DBT <sup>in place of</sup> ~~on~~ TPDS scheme.
  - Poor people will have choices to buy food from market. ①
- ② Food coupon can be issued instead of directly giving food grain.
- ③ JAM trinity can be ~~used~~ used to reduce corruption and inefficiency.

Remarks

④ Local SITGs, FPOs should be empowered by the government to procure and distribute foodgrain instead of a centralized FCI and state institutions.

Food security is essential for <sup>inclusive</sup> development and the TPDS system must ~~be~~ made efficient, corruption free, leakage free to ensure basic food security.

Remarks