GS SCORE
An Institute for Civil Services

UPSC MAINS 2020
MODEL HINTS

GENERAL STUDIES
PAPER-3

www.iasscore.in

UPSC MAINS 2020

GS PAPER - 3

Time Allowed: 3 hrs.   *Max. Marks: 250*

1. Explain intra-generational and inter-generational issues of equity from the perspective of inclusive growth and sustainable development.   **(Answer in 150 words) (10)**

2. Define potential GDP and its determinants. What are the factors that have been inhibiting India from realizing its potential GDP?   **(Answer in 150 words) (10)**

3. What are the main constraints in the transport and marketing of agricultural produce in India?   **(Answer in 150 words) (10)**

4. What are the challenges and opportunities of the food processing sector in the country? How can the income of the farmers be substantially increased by encouraging food processing?   **(Answer in 150 words) (10)**

5. What do you understand by nanotechnology and how is it helping in health sector?   **(Answer in 150 words) (10)**

6. How is science interwoven deeply with our lives? What are the striking changes in agriculture triggered off by the science-based technologies?   **(Answer in 150 words) (10)**

7. How does the draft Environment Impact Assessment (EIA) Notification, 2020 differ from the existing EIA Notification, 2006?   **(Answer in 150 words) (10)**

8. What are the salient features of the JalShakti Abhiyan launched by the Government of India for water conservation and water security?   **(Answer in 150 words) (10)**

9. Discuss different types of cybercrimes and measures required to be taken to fight the menace.   **(Answer in 150 words) (10)**

10. For effective border area management, discuss the steps required to be taken to deny local support to militants and also suggest ways to manage favourable perception among locals.   **(Answer in 150 words) (10)**

11. Explain the meaning of investment in an economy in terms of capital formation. Discuss the factors to be considered while designing a concession agreement between a public entity and a private entity.   **(Answer in 250 words) (15)**

12. Explain the rationale behind the Goods and Services Tax (Compensation to states) act of 2017. How has COVID-19 impacted the GST compensation fund and created new federal tensions?   **(Answer in 250 words) (15)**

13. What are the major factors responsible for making rice-wheat system a success? In spite of this success how has this system become bane in India?   **(Answer in 250 words) (15)**

14. Suggest measures to improve water storage and irrigation system to make its judicious use under depleting scenario.   **(Answer in 250 words) (15)**

15. COVID-19 pandemic has caused unprecedented devastation worldwide. However, technological advancements are being availed readily to win over the crisis. Give an account of how technology was sought to aid management of the pandemic. (Answer in 250 words) (15)

16. Describe the benefits of deriving electric energy from sunlight in contrast to the conventional energy generation. What are the initiatives offered by our Government for this purpose?

(Answer in 250 words) (15)

17. What are the key features of the National Clean Air Programme (NCAP) initiated by the Government of India? (Answer in 250 words) (15)

18. Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach. (Answer in 250 words) (15)

19. What are the determinants of left-wing extremism in Eastern part of India? What strategy should Government of India, civil administration and security forces adopt to counter the threat in the affected areas? (Answer in 250 words) (15)

20. Analyze internal security threats and trans-border crimes along Myanmar, Bangladesh and Pakistan borders including Line of Control (LoC). Also discuss the role played by various security forces in this regard. (Answer in 250 words) (15)

❖❖❖❖❖

GS SCORE

UPSC MAINS EXAMINATION, 2020
(GENERAL STUDIES PAPER - 3)

HINTS

1. *Explain intra-generational and inter-generational issues of equity from the perspective of inclusive growth and sustainable development.*

Approach

1. *Introduction significance of intergenerational and intra-generational issues of equity in the context (20 words)*
2. *Discuss the intergenerational and intra-generational issues of equity from the perspective of inclusive growth and sustainable growth. Explain with examples (110 words)*
3. *Conclusion. (20 words)*

Hints:

Intergenerational and intragenerational issues of equity:

Inclusive growth focuses on ecological friendly economic growth which is a necessary and crucial condition for poverty reduction and sustainable development. The intergenerational issues relate to, involve, and affect several generations because of which intergenerational equity is the basis of the concept of sustainability, whereas an intrinsic constituent of sustainable development is intragenerational equity, as it includes the role of virtue ethics and attitudes of people in changing lifestyles and behaviors across the existing generation or generations affecting fairness and impartiality.

Intergenerational and intragenerational issues of equity from the perspective of inclusive growth and sustainable development.

- The concept of intergenerational equity and intra-generational equity deals with using of the earth's resources for the present generation and the future generation, and its impact upon the state of the earth. These equitable principles are based upon the concept of sustainable development, it means using of earth's resources in such a manner that it can meet the present needs as well as the future needs of the living creatures.

- Intergenerational equity signifies the rights and interests of the present and future generation regarding the renewable and non-renewable resources of the earth. Whereas, intragenerational equity deals with the equality among the same generations as far as the utilization of resources is a concern. It includes fair utilization of global resources among the human beings of the present generation. These two concepts are considered to be the main strength of the doctrine sustainability to maintain proper balance in the use of natural resources.

    1. For example, Poverty and environmental degradation are mutually reinforcing; poor people live in the most polluted or degraded environments, and this contributes to their poverty. Although poverty and environmental degradation are important in their own right, they also can cause or contribute to wars, starvation, ethnic tensions, and terrorism, which are more likely to get headlines than their underlying cause.

- Thus the concept of inclusive growth and sustainable development can take care of poverty as well as the environment without creating trouble for future generations.

- Further, the Concerns about intergenerational equity quite naturally depend upon perceptions about prospects. In a growing economy, the fair treatment of future generations seems to be a less critical issue precisely because the future will do better than the present.

- The depletion of reserves of nonrenewable resources and the deterioration of environmental quality have contributed to a growing perception that the historical trend of a steady improvement in human welfare is being reversed.

Conclusion:

Hence today, inclusive and sustainable development has become a necessity for the present condition of the earth, otherwise, the future generation will be deprived of the resources. To achieve inclusive and sustainable growth, only proper distribution of resources is not enough, but proper disposal of those resources after utilization is required.

2. Define potential GDP and its determinants. What are the factors that have been inhibiting India from realizing its potential GDP?

> ### Approach
>
> 1. *Introduction about potential GDP (20 words)*
> 2. *Define the concept of potential GDP and its determinants (40 words)*
> 3. *Discuss factors that have been inhibiting India from realizing its potential GDP (90 words)*

Hints:

India has a potential GDP growth rate of 6-7 per cent. The long-term growth prospective or potential for India is one of the highest in the Asia Pacific region.

Concept of potential GDP and its determinants.

Potential gross domestic product (GDP) is the level of output that an economy can produce at a constant inflation rate. However, the cost of rising inflation could make an economy temporarily produce more than its potential level of output. The capital stock, the potential labor force depending on demographic factors and participation rates, the non-accelerating inflation rate of unemployment, and the level of labor efficiency determine this potential output which is important to calculate the output gap.

Factors inhibiting the potential GDP of India from realizing its potential.

- Fiscal policy and structural determinants of the economy. - fiscal policies followed by the country directly impact the potential GDP as these determine the flow of capital and technology.

- High employment generation in the economy will show that potential GDP to be high but it will not be achieved due to low productivity from employment generation.

- Currency depreciation is another issue.GDP is calculated using American dollars after converting it from Indian rupees. The depreciation of Indian rupees vis a vis American dollars will reduce GDP value.

- The inflow of foreign capital may decrease over some time due to various factors. This will result in the economy not being able to emulate the potential numbers.

- The infrastructure growth in the domestic economy may not be in predicted lines. This will hamper the final contribution to GDP output.

- Lots of practical reforms have taken place and they are broadly facilitating the macro growth and should ultimately also translate into a better corporate earnings environment. larger headline reforms like the Goods and Services Tax that have mixed results but a lot of micro-level reforms like the ease of doing business has improved the situation dramatically, This has a direct impact on potential GDP.

3. What are the main constraints in the transport and marketing of agricultural produce in India?

Approach

1. Briefly introduce the transport and marketing of agricultural produce. (30 words)
2. Describe the various constraints related to transport and marketing produce in India. (80 words)
3. Way forward to improve the related sector. (40 words)

Hints:

Indian agriculture support to the national gross domestic product (GDP) is around 15 percent. With food being the uttermost need of humans, the emphasis has been on commercializing agricultural production. Due to this, adequate production and even distribution of food have become a high priority global concern. However, there are several difficulties involved in agricultural marketing as agricultural produce involves an element of risk like perishability and it again depends on the type of produce. If the agricultural produce happens to be seasonal, it also pose threat. Similarly, there are several risk elements involved in agricultural marketing.

Some major constraints associated with transportation and marketing of agricultural produce:

- **Connectivity:** There is a lack of connectivity from villages to markets.

- **Sorting and grading technology:** Farmers lack knowledge about the process

- **Numerous stakeholders working in isolation:** The food supply chain is complex with perishable goods and numerous small stakeholders. In India, the infrastructure connecting these partners is very weak.

- **Lack of demand estimation:** Demand forecasting is absent and the farmers try to push whatever they produce into the market.

- **Lack of technology applications:** Cold chain logistic supply chains should take advantage of technology improvements in data capture and processing, product tracking and tracing, synchronized freight transport transmit times for time compression along the supply chain, and supply-demand matching.

- **Lack of system integration:** The supply chain needs to be designed and built as a whole in an integrated manner. The process of new product development, procurement, and order to delivery processes should be well designed and well supported with the help of IT tools and software.

- **Presence of a large number of unorganized retailers:** At present, the unorganized retailers are linked with farmers through wholesalers or commission agents. The commission agents and wholesalers' redundant supply chain practices make unorganized further inefficient.

- **Slowdown in production growth:** With around 67 percent of landholdings being marginal, with an average size of 0.4 hectares, more than half of marginal farmers are likely to not have any excess income to spare beyond subsistence, hindering the improvements in farm-level productivity

- **Weak rural Infrastructure:** Lack of better roads and rail facilities creates logistics problem

- **Absence of Cold Storage Facilities:** It leads to spoiling of perishable items like fruits etc.

- **Unavailability of Insurance Products** to protect goods while moving.

- **Presence of Asymmetric information:** It is usually found that the middle man has more information than both farmers and consumers regarding prices, supplies, and stocks available.

- **Other issues:** Apart from the above areas of concern, other issues such as Lack of applied research, Taxation issues, access to credit, obsolete technologies, etc. persist in the sector.

Way forward:

- Improving infrastructure through schemes like **Ajeevika Grameen Express yojana**, **SAMPADA yojana** for building warehouses.

- Vertical coordination of farmers through **cooperatives, contract farming, and retail chains** would facilitate better delivery of output, reduce market risks, provide better infrastructure, attract more public interest, acquire better extension services, and create awareness regarding the prevailing and new technologies.

- **Customized logistics** is another important immediate requirement to make logistics effective. This reduces the cost, facilitates the maintenance of the quality of the produce, and fulfills the requirements of targeted customers.

- **Information system** for better coordination among different stakeholders from farmers to consumers is the need of the hour. The internet and mobile communication can also be used to enable information and financial transfer between the stakeholders.

- There are initiatives such **as the India Food Banking Network (IFBN),** which is promoting the concept of collaborative consumption with support from the private sector and civil society organizations.

4. *What are the challenges and opportunities of the food processing sector in the country? How can the income of the farmers be substantially increased by encouraging food processing?*

Approach

1. *Briefly introduce the food processing sector. (30 words)*
2. *Describe challenges and opportunities related to the food processing sector in India. (60 words).*
3. *Describe how it helps in increasing the farmer's income. (40 words).*
4. *Conclusion (20 words).*

Hints:

The food processing sector is one of the largest industries in India and is ranked 5th in terms of production, consumption, and export. It covers a range of products from sectors comprising agriculture, horticulture, plantation, animal husbandry, and fisheries. However, over the years, with emerging of new markets and technologies, the sector has broadened its scope. It has started producing many new items like ready-to-eat food, beverages, processed and frozen fruits and vegetables, marine and meat products, etc. Food processing is one of the largest industries in the world from the viewpoint of the number of companies involved in the sector, as well as in terms of its total economic value.

Challenges related to the Food processing sector

- **Small size companies:** Indian food processing companies are small and can't compete with global giants that invest heavily in R & D.

- **Lack of good laboratories in India**: Food export to the US and EU demands high-quality standards. India lacks good laboratories to check heavy metal and other toxic contamination in food.

- **Lack of skilled workforce**. We have only a few graduates in Food Technology.

- **Lack of the right vision and support** from the government at the right time.

- **Lack of good transportation facilities.** Roads are overburdened.

- **Lack** of storage facilities and good production techniques.

GS SCORE

- **Absence of Comprehensive national-level policy on the food processing sector:** The food processing sector is governed by statutes rather than a single comprehensive policy on food processing.

- **Food Safety Laws & Inconsistency in State and Central policies:** Though historically various laws were introduced to complement and supplement each other in achieving total food sufficiency, safety, and quality the result is that the food sector in India is governed by several different statutes rather than a single comprehensive enactment.

- **Lack of adequate trained manpower:** Many positive developments in the food processing sector have also resulted in the apprehension about the emerging skill shortages due to a mismatch between the demand for specific skills and available supply.

Opportunities related to the food processing industry:

- This industry has very high employment intensity and hence it can play a role in employment generation as well.

- In **2016**, the Food Processing industry constituted more than **8% of India's GDP** through **manufacturing.**

- The food-processing sector will address several concerns such as disguised unemployment in agriculture, rural poverty, food security, food inflation, improved nutrition, and prevention of wastage of food.

- The cost of skilled manpower is relatively low as compared to other countries.

- The Food Processing Industry is one of the major employment intensive segments contributing **13.04%** of employment generated in all **Registered Factory sector** in **2012-13.**

- Food is the biggest expense for an urban and rural Indian household constituting a share of **38.5% and 48.6%** of the total consumption expenditure of households in **2011-12** respectively.

- With favorable economic & cultural transformation, a shift in attitudes & lifestyles, consumers are experimenting with different cuisines, tastes, and new brands.

- The food processing sector in India ranks **1st in terms of employment** & number of factories in operation and **3rd in terms of output**

- **Curbing Migration:** Employs in rural areas hence reduces migration from rural to urban. Resolves issues of urbanization.

- **100% FDI** is allowed in the sector. The **Confederation of Indian Industry (CII)** estimates that this sector has the potential to attract as much as the **US $33 billion** of investment over the **next 10 years** and also **to generate employment of nine million person-days.**

- India's share in global processed food items is very poor. It can **help in offsetting the increasing trade deficit.**

Potential of Food Processing Sector for substantially increasing farmer's income.

- India's food processing sector is one of the largest in the world and its output is expected to reach $ 535 Billion by 2025-26.

- It will help in **increasing investment in Indian agriculture**, bring new technological inputs, and will **raise farmers' incomes**. It will also **promote the diversification of Indian agriculture.**

- This sector also involves **16% of all the workforce** in the organized sector and employs close **to 5 crore people** directly or indirectly.

- Development of backward linkages by evolving conducive regulatory framework for contract and corporate farming and encouraging commodity clusters and intensive livestock rearing to source appropriate quality, quantities, and varieties of input by appropriate modifications to the APMC act.

- Develop dedicated freight corridors in rail, supplemented by concretized dual carriageways for the states and national highways, which will directly reduce the cost of goods supplied.

- The Indian Council for Fertilizer and Nutrient Research **(ICFNR)** will adopt international best practices for research in the fertilizer sector, which will enable farmers to get good quality fertilizers at affordable rates and thereby achieve food security for the common man.

- **Several Fiscal Incentives to FPS including 100% income tax exemption** to food processing units on profits for the **first five years of operation and 25%** thereafter for the next five years etc. provided by the government need to be continued

- **Reduction of Excise duty, customs duty exemption from service tax** on pre-conditioning precooling, ripening waxing and retail packing, labeling of fruits and vegetables, and transportation of food grains are some other incentives available to the **FPI sector**

- A special fund in NABARD worth INR 2,000 crore, designated as Food Processing Fund for proving affordable credit to food processing units in Mega & Designated Food Parks has been setup. This fund is used for providing loans at a concessional rate of 8-9% for 7 years period.

- **42 mega food parks** being set up with an allocated investment **of INR 98 Billion** which provides opportunities to increase farmer's income.

- Food processing industries make value addition to the raw food materials and hence make food items competitive in markets, easy to export, and easy to preserve.

Conclusion:

By serving as a link between the agriculture and manufacturing sectors and by fulfilling a basic need of Indian citizens – an assured supply of affordable and quality food at all locations, this sector has the potential to be a major driver in India's growth. In India, the optimum development of the food processing industry will contribute significantly in tackling several developmental concerns such as unemployment, rural poverty, food security, food inflation, malnutrition, massive food wastage, etc.

5. *What do you understand by nanotechnology and how is it helping in health sector?*

> ### *Approach*
>
> 1. *Briefly introduce the Nanotechnology (20 words)*
> 2. *Discuss how Nanotechnology helping in Health sector in India threatens the livelihood of smaller retailers (50 words)*
> 3. *Discuss the risk associated with use of Nanotechnolgy in health. (40 words)*
> 4. *Conclusion (40 words)*

Hints:

Nanotechnology is the use and the developments of techniques to study physical phenomena and develop new material and devices structures in the physical size range from 1 to 100 nanometres (nm). Nanotechnology influences almost all areas of our lives, including manufacturing, electronics, computers and information technologies, medicine, the environment and energy storage, chemical and biological technologies and agriculture.

Nanotechnology and how is it helping in health sector

Nanomedicine is an application of nanotechnology which works in the field of health and medicine. Some applications are discussed below:

- **Drug Delivery:** Nanoparticles are used for **site-specific drug deliver**y. In this technique, the required drug dose is used and side-effects are lowered significantly as the active agent is deposited in the morbid region only. Targeted medicine reduces drug consumption and side-effects. This highly selective approach can reduce costs and pain to the patients.

GS SCORE

- **Tissue Engineering:** With the help of nanotechnology, damaged tissue can be reproduced or repaired. These artificially stimulated cells might **revolutionize the transplantation of organs or artificial implants.**

- **Antibacterial Treatments:** Researchers are developing a technique to kill bacteria using gold nanoparticles and infrared light. **This method may lead to improved cleaning of instruments in hospital settings**.

- **Wound Treatment:** Researchers have demonstrated a bandage that applies electrical pulses to a wound using electricity produced by nanogenerators worn by the patient.

- **Cell Repair**: **Nanorobots**could be programmed to repair specific diseased cells, functioning in a similar way to antibodies in our natural healing processes.

- **Cancer Treatment:** Nanoparticles have a **high surface area to volume ratio**. This allows for many functional groups to be attached to a nanoparticle, which can seek out and bind to certain tumour cells. Iron nanoparticles or gold shells are finding important application in cancer treatment.

- **Imaging:** In vivo imaging is another area where tools and devices are being developed. **Using nanoparticle contrast agents, images such as ultrasound and MRI have a favourable distribution and improved contrast**.

- **Blood purification:** In contrast to dialysis, which works on the principle of the size-related diffusion of solutes and ultrafiltration of fluid across a semi-permeable membrane, **the purification with nanoparticles allows specific targeting of substances**. Additionally larger compounds which are commonly not dialyzable can be removed using Magnetic microparticles.

- **Medical Device:** Neuro-electronic interfacing is a **visionary goal** dealing with the construction of nanodevices that will permit computers to be joined and linked to the nervous system.

- **Gene sequencing**: It has become more efficient with the invention of nanodevices like gold nanoparticles, these gold particles when tagged with short segments of DNA can be used **for detection of genetic sequence in a sample**.

- **Stem Cell Technology:** Nanotechnology has made an excellent contribution to the field of stem cell research. For example, magnetic nanoparticles (MNPs) have been successfully used to isolate and group stem cells.

Risks of Nanotechnology in Health setor:

- Since this field is still at its **nascent stage**, the likely risks are contentious.

- The regulatory authorities like the **US Environmental Protection Agency** and the **Health and Consumer Protection Directorate of the European Commission** have started assessing the potential risks posed by the nanoparticles.

- Nanotoxicology is the study of potential **health risks** of nanomaterials.

- The human body can easily take up the nanomaterials as they are small in size. However, there is a **need for detailed research** on how it would behave inside an organism. The behaviour of nanoparticles based on their size, shape and surface reactivity must be thoroughly analysed before launching them into the market.

- **Nanopollution** is the generic term that is used to describe the waste generated by the nanodevices or nanomaterials during the manufacturing process.

Conclusion:

Advancement in the field of nanotechnology and its applications to the field of medicines and pharmaceuticals has revolutionized the twentieth century. A nanotechnology is a valuable tool for the prevention, diagnosis and treatment of human diseases. The medical area of nanoscience application has many projected benefits and is potentially valuable for all human races.But because of their small

size, much concern has been expressed about the potential for adverse health effects arising from the ability of nanoparticles to penetrate cell walls and the blood-brain barrier. These concerns also include possible detrimental health effects during manufacturing and transportation. Therefore, there is a need to identify key gaps in knowledge and areas where further research may be targeted in order to efficiently exploit the technology.

6. *How is science interwoven deeply with our lives? What are the striking changes in agriculture triggered off by the science-based technologies?*

Approach

1. *Briefly discuss the technological development linked to Fourth Industrial Revolution. (20 words)*
2. *Discuss the impact of science on our day-to-day life. Also discuss striking Changes triggered by Science based technology in agriculture. (110 words)*
3. *Conclude with importance of technical development in development of different sectors of economy aligning it with India. (20 words)*

Hints:

The modern lifestyle has been heavily impacted by technology due to impact of Fourth industrial revolution characterized by artificial learning, Internet of Things, Cloud Computing and Robotics. From education to employment and from farm to industries, Science and technology has impacted the day to day lifestyle in some way or other.

Impact of Science on our lives

- **Education:** There has been a surge in scientific advancement in form of scientific learning, demonstration based on 3D technologies.

- Use of technology to demonstrate different theories and e-learning has been developed under shadow of science.

- **Health:** Development of science goes hands in hand with development of healthcare sector.Evolution in healthcare sector in India from e-medicines to e-consultancy is due to development of science.

- **Entertainment:** Technology has transformed recreational activities characterized by 3-D effects in movies to VFX technology which has provided a new dimension to cinematography.

- **E-market place:** Development of science has brought the marketplace to doorsteps. It is the result of development of e-commerce websites which has done so.

- Further, online Bill payments and e-banking services have made lives comfortable by bringing these facilities to home.

- **Social Connectivity:** Changed nature of social connectivity has brought the world together.

- The interaction of people around the globe has increased due to social media platforms such as Facebook and Twitter.

- Now, every regional problem is discussed as global problem while every global problem is treated as regional problem.

Striking Changes triggered by Science based technology in agriculture

- **Soil testing labs** have increased the productivity of soil by indicating nutrient abundance and deficiency.

- **Precision irrigation technologies** such as drip irrigation have reduced the consumption of water in one hand while checking land degradation on the other.

- **Fertilizers** of different kinds be it organic or inorganic, if used optimally has increased agricultural productivity.

- **Farm mechanization** due to use of tractors, harvesters, thrashers e.t.c. has decreased dependence on manual labourers and increased farm productivity.

- **Processing facilities and storage facilities** has increased the value of agricultural produce as well as their shelf life.

- Use of nuclear radiation in controlled environment in treating agriculture produce has been possible due to development of science.

- Irradiation is very effective in treating agricultural produce to enhance its shelf life. It leads to effective elimination of harmful bacteria and insects/pests.

- **Emergence of E-marketing** due to development of technology has largely impacted re-distribution of agriculture produce across a region.

- It has provided farmers better options to sell their produce anywhere with their choice.

- **Agriculture Education** can be accessed by farmers at doorstepdue to emergence and spread of internet technology across the rural hinterland.

- **Development of innovative methods of farming practices** such as LED farming, vertical farming, controlled environment agriculture, soil solarization technology and fertigation methods have given an impetus to agriculture development.

- **Genetic engineering and hybrid technology in agriculture** has done a miracle to make India self sufficient in food while genetic engineering can solve our future problems also.

Conclusion:

The cohesive nature of science and development has resulted in rapid pace of economic development across the globe. It has also improved the living conditions of people and helped in enriching social capital. Development and pace of agricultural growth rate has been interlinked and is experienced across the globe. India must put its effort to link different sectors of economy with emerging technologies to attain its sustainable development goals. It will also help India to achieve doubling the farmer's income by 2022 coupled with attaining $5 trillion economy target by 2024.

7. How does the draft Environment Impact Assessment (EIA) Notification, 2020 differ from the existing EIA Notification, 2006?

> ### Approach
>
> 1. *The Answer should be started with a brief introduction about the EIA. It should also give a brief about the EIA 2020 and 2006. (40 words)*
>
> 2. *While comparing in between draft EIA 2020 and 2006, the different clauses can be compared and alongside the discussion over them should be done. (80 words)*
>
> 3. *Answer can be concluded by giving in the plausible impacts and suggestive measures. (30 words)*

Hints:

An Environment Impact Assessment is basically done to make a scientific estimate of the likely impacts of a project, such as a mine, irrigation dam, industrial unit or waste treatment plant.

To evaluate the impact of various developmental activities the EIA, 2006 was notified, which sets a form of guidelines to do the assessment. The government has recently come up with the draft EIA, 2020 to replace the previous method. The draft EIA has seen criticism over its multiple clauses. Apprehensions are surrounding that this will seriously affect the environment in favour of industry

that violate the norms by starting work without valid clearance, expands the list of projects exempted from the public consultation, and would fail to ensure a robust post-environment clearance monitoring system.

The comparison between the purposed draft and the previous notification can be done based on the following parameters:

- **Exemption from the Public Consultation:** Some of the major sensitive projects such as Offshore and onshore oil, gas and shale exploration, hydroelectric projects up to 25 MW etc. have been exempted from the draft EIA 2020. Earlier, in EIA 2006, they were the part of the screening through Expert Appraisal Committees. The exemption to a list of sensitive projects could impact the environment in a substantial manner.

- **Post-facto environment clearance:** The new provision for post facto environment has been made a part of the draft EIA 2020. The post-facto clearance would further damage the environment which could not be rectified in a post-facto manner.

- **Reduction in the time for public hearing:** The notice period for public hearing has been cut from 30 days to 20 days. The reduction of time duration will make the draft EIA report difficult to study critically and constructively.

- **Project Modernisation:** Projects those involve more than 25% increase will require an environment assessment, and over 50% will attract public consultation. Earlier, in EIA 2006, there were no such limits. For example, this could be harmful for those projects which are already present in the eco-sensitive regions.

- **Single report for compliance:** In EIA 2006, the two annual compliance reports had to be presented which has been replaced with one in draft 2020. Non- compliance has already been a big issue and the recent change would make the compliance procedure worst.

- **Reporting violation**: The proposed EIA 2020 draft, excludes the reporting of violation by the public and the government will take cognizance of reports only from the violator-promoter, government authority, Appraisal Committee or Regulatory Authority. This can further enhance the chances of corruption which is already a rampant.

Conclusion:

By comparing the draft 2020 and EIA 2006, we may say that multiple clauses such as post- facto clearance removal for a categories of projects such as those in the eco-sensitive and hot-spots, enhanced time for public consultation, reducing the exemption list for some of the most sensitive subjects such as hydroelectric projects, vigilance of compliance report and cognizance of violation by general public can be some of the measures to enhance the impact of the draft EIA 2020.

8. What are the salient features of the JalShakti Abhiyan launched by the Government of India for water conservation and water security?

> **Approach**
>
> 1. *A brief introduction and overview of the Jal Shakti Abhiyan. (30 words)*
> 2. *Later on the features and the focus areas should be discussed. (45 words)*
> 3. *It can also include the significance of the project. (45 words)*
> 4. *Concluded by supporting the advantage of the Jal Shakti Abhiyan. (30 words)*

Hints:

Jal Shakti Abhiyan (JSA) is a time bound mission mode water conservation campaign. The campaign was launched in a phased manner in 2019. The conservation campaign emphasize on 1592 stressed blocks in 256 districts. It is an initiative of Government of India towards water conservation through a

multidisciplinary approach. It emphasise on multiple dimensions such as traditional methods, decentralization, innovation, scientific collaboration and forest conservation etc. Some of the features of the Jal Shakti Abhiyan can be studied as follows:

Features of the JSA

- **Focus on water stressed areas:** It focuses on India's most water-stressed districts for water conservation and water resource management.

- **Collaboration between different state organs**: It is a collaborative effort of different ministries and State governments.

- **More of a Jan Andolan:** The JSA aims at making water conservation a Jan Andolan through asset creation and extensive communication. It incorporates collaboration at community level.

- **Traditional methods of conservation:** The project involves on traditional knowledge for water conservation and rain water harvesting.

- **Positive change:** It aims to bring a positive change among the people for water conservation.

- **Sustainable efforts**: It aims at providing drinking water to every household on priority and in sustainable manner.

- **Supplementary initiatives**: The conservation efforts will be supplemented by initiatives such as developing block and district water conservation plans and Krishivigyan Kendra melas to promote efficient water use for irrigation and better crop choices.

The JSA focus on five intervention Areas, which includes.

- Water Conservation and Rainwater harvesting

- Renovation of traditional and other water bodies

- Reuse and recharge structure

- Watershed development

- Intensive afforestation

Significance of the Project

- The Project is very significant as it tries to bring the traditional knowledge of conservation.

- It would help in creating awareness among the masses regarding the conservation efforts through the organization of melas and direct involvement.

- The project will club the traditional knowledge with the scientific aspects of conservation.

- It focuses on a comprehensive approach of water conservation by the recycling of the water, watershed development and efforts to conserve the forest also.

- It works in a decentralized manner by incorporating plans for district and block level.

Conclusion:

As India is a monsoon country and heavily depends on rainwater for its requirement of water. A number of districts such as in the State of Rajasthan, Maharashtra and Southern part of Uttar Pradesh face severe drought situation. The situation is aggrieved by the recent climate changes in the form of El-Nina and La-Nina phenomenon. The Conservation initiative such as Jal Shakti Abhiyan can provide a comprehensive approach to consolidate the water harvesting and conservation. The initiative is innovative in its essence as it focuses on a comprehensive approach of water conservation along the forest conservation and watershed development plans.

9. Discuss different types of cybercrimes and measures required to be taken to fight the menace.

Approach

1. *Explain the term cybercrime with an appropriate definition. (20 words)*
2. *Discuss different types of cybercrimes. (30 words)*
3. *Discuss various measures that should be taken to fight against cybercrime. (70 words)*
4. *Conclusion/ Way forward. (30 words)*

Hints:

Cybercrime is any criminal activity that involves a computer, networked device or a network. While most cybercrimes are carried out in order to generate profit for the cybercriminals, some cybercrimes are carried out against computers or devices directly to damage or disable them, while others use computers or networks to spread malware, illegal information, images or other materials.

Types of Cybercrime

1. **Hacking:** Hacking is simply any unauthorized access of a computer system. Sometimes, hacking can be fairly harmless, such as rewriting sections of an existing software program to allow access to features the original designer did not intend.

2. **Viruses, Worms, Malware and Ransom ware:** Many types of malicious software can be delivered by a wide range of means. In the case of most viruses, they need to actually be downloaded in some way onto a hard drive. In targeted attacks, a victim may receive an innocent-looking email that is ostensibly from a co-worker or trusted individual containing a link to click on or file to download.

3. **Cyber extortion**: A crime involving an attack or threat of an attack coupled with a demand for money to stop the attack.

4. **Crypto jacking**: An attack that uses scripts to mine crypto currencies within browsers without the user's consent. Crypto jacking attacks may involve loading crypto currency mining software to the victim's system.

5. **Cyber espionage**: A crime involving a cybercriminal who hacks into systems or networks to gain access to confidential information held by a government or other organization. Attacks may be motivated by profit or by ideology.

6. **Exit scam**: The dark web, not surprisingly, has given rise to the digital version of an old crime known as the exit scam. In today's form, dark web administrators divert virtual currency held in marketplace escrow accounts to their own accounts — essentially, criminals stealing from other criminals.

Ways to prevent cyber-crimes

1. **By Using Strong Passwords**: Maintaining different password and username combinations for each of the accounts and withstand the desire to write them down. Weak passwords can be easily broken.

2. **Keep social media private**: Be sure that your social networking profiles (Facebook, Twitter, YouTube, etc.) are set to be private. Once be sure to check your security settings. Be careful with the information that you post online. Once if you put something on the Internet and it is there forever.

3. **Protect your storage data**: Protect your data by using encryption for your important diplomatic files such as related to financial and taxes.

4. **Protecting your identity online**: We have to be very alert when we are providing personal information online. You must be cautious when giving out personal ids such as your name, address, phone number, and financial information on the Internet.

5. **Keep changing passwords frequently**: When it comes to password, don't stick to one password. You can change your password frequently so that it may be difficult for the hackers to access the password and the stored data.

6. **Securing your Phones**: Many people do not know that their mobile devices are also unsafe for malicious software, such as computer viruses and hackers. Make sure that you download applications only from trusted sources. Don't download the software /applications from unknown sources. It is also pivotal that you should keep your operating system up-to-date.

7. **Call the right person for help**: Try not to be nervous if you are a victim. If you come across illegal online content such as child exploitation or if you think it's a cyber-crime or identity theft or a commercial scam, just like any other crime report this to your local police. There are so many websites to get help on cyber-crime.

8. **Protect your computer with security software**: There are many types of security software that are necessary for basic online security. Security software includes firewall and antivirus software. A firewall is normally your computer's first line of security. It controls that that, what and where is the communication is going on the internet. So, it's better to install security software which is from trusted sources to protect your computer.

9. **Further, Government has taken several steps to prevent and mitigate cyber security incidents. These include:**

    a. Establishment of National Critical Information Infrastructure Protection Centre (NCIIPC) for protection of critical information infrastructure in the country.

    b. All organizations providing digital services have been mandated to report cyber security incidents to CERT-In expeditiously.

    c. Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre) has been launched for providing detection of malicious programmes and free tools to remove such programmes.

    d. Issue of alerts and advisories regarding cyber threats and counter-measures by CERT-In.

    e. Issue of guidelines for Chief Information Security Officers (CISOs) regarding their key roles and responsibilities for securing applications / infrastructure and compliance.

    f. Provision for audit of the government websites and applications prior to their hosting, and thereafter at regular intervals.

    g. Empanelment of security auditing organisations to support and audit implementation of Information Security Best Practices.

    h. Formulation of Crisis Management Plan for countering cyber-attacks and cyber terrorism.

    i. Conducting cyber security mock drills and exercises regularly to enable assessment of cyber security posture and preparedness of organizations in Government and critical sectors.

    j. Conducting regular training programmes for network / system administrators and Chief Information Security Officers (CISOs) of Government and critical sector organisations regarding securing the IT infrastructure and mitigating cyber-attacks.

Conclusion:

In day-to-day life, everyone is leading their life with technology. Our daily life depends on technology. So, nowadays everybody knows the internet and aware of it. The Internet has everything that a man needs in terms of data. So, people are becoming addicted to the Internet. The percentage of the population using the internet is increasing day-by-day. National security is in some way getting

dependent on the internet. But the new technologies which have arrived also brought unusual threats and Cyber-Crime is one such concept.

10. For effective border area management, discuss the steps required to be taken to deny local support to militants and also suggest ways to manage favourable perception among locals.

Approach

1. *Briefly introduce the India's border management situation and challenges (20 words)*
2. *Discuss the role of local community in border management and what are challenges in border management In context of local community (50 words)*
3. *Discuss the Ways to manage favourable perception among locals (40 words)*
4. *Conclusion (40 words)*

Hints:

Border Management is an integral approach towards borders in which along with security enhancement, infrastructure & human development is undertaken.

India's border situation

- India has 15,106.7 Km of land border and a coastline of 7,516.6 Km including island territories. From Sir Creek to the Bay of Bengal, India's land borders present a geographical diversity of a unique kind. Much of its borders are topographically difficult.

- **Challenges in border management are peculiar like**;

  – Some stretches of border are **porous and easily negotiable**

  – Some stretches of border are un-demarcated.

  – Border is physically unguarded at many places due to terrain constraints and lack of approachability. Also, these border regions have their own ethnic, cultural, religious and racial configurations distinct from the mainland and in some areas depicting an unmistakable affinity with those of across the borders.

  – The remoteness of local administration, its low visibility, illegal immigration, smuggling of arms ammunition and narcotic substances require number of measures from the point of view of national security.

Hence, 'the proper management of borders is vitally important for national security.' Besides border guarding forces and other Central Government agencies, States' Civil Administration, the border population is the most important ingredient in border management.

Border Population role in Border management

- The people living in the border areas are the most important ingredients towards a secure and safe border. Village Defence and Development Committees at the base level with cooperation of the local populace would go a long way in enhancing security and development of the borders besides providing a sense of belonging to these people. But there has been serious issues with local in border management **due to following challenges:**

  (a) Inheritance Problems faced by border population like:

    – Vulnerability to actions of border criminals

    – Restriction/control over movement by forces

    – Fear of unknown—threat of aggression by enemy, cross border shelling, firing etc

    – Lack of industrialisation/economic progress, neglect by Government being frontier areas

GSSCORE

- Lack of infrastructure, means of communication, education, medical, water and remoteness.

(b) Issues between Locals and Border Guarding Force (BGF)

- **Prevention of Smuggling Activities which is a Means of Livelihood to Border Population:** Smuggling is means of livelihood for many people in bordering areas. Prevention of smuggling activities by BGF lead to a perceived feeling that, they unnecessarily interfere in the means of livelihood of local populace.

- **Lack of Knowledge of Local Language:** There is often a lack of communication between the local people and the BGF causing conflict/distrust.

- **A Sense of Distrust between the BGF and the Local Community:** In many areas, BGF personnel have little communication with the local people to prevent connivance with smugglers and other criminals. The BGF field leadership keeps minimum contact with the local villagers. Hence, a communication gap exists which is detrimental to a congenial working environment.

- **Border Fencing and Connected Problems:** The construction of the fencing has also generated many differences between the local villagers and the BGF. Access to the farmland across the fencing is regulated. Frequent frisking and timely gate opening are irritants to farmers. The BGF have however their own constraints.

- **Inherent limitations of BGF:** The concept of community relationship, if not alien, is still not given due importance by BGF. Border guarding does not merely mean placing a sentry on a vantage point for preventing any threat to territorial sovereignty and sanctity

Ways to manage favourable perception among locals

One of the most important challenges of border management is integration of local community in border management. Preventing alienation of border population, winning their hearts and minds by formulating people inclusive border management policies is of paramount importance. **This can be achieved by:**

- Providing adequate security.

- Improvement of basic amenities, infrastructure and living conditions of people in border areas.

- Assist in generating employment opportunities.

- BGF must identify community-oriented programmes, which could be: Identification and development of projects in terms of infrastructure, health, education, employment generation, etc.

- An effective communication with the villagers leading to better understanding, win public trust and to encourage public co-operation to develop public understanding of problems faced by the force.

- Projecting positive image of BGF through media.

- A strict adherence to code of conduct, ethical standards of discipline and

- integrity and attempts on attitudinal changes

Conclusion:

Border management in India, as an institution carries British legacy and is still disliked and suspected by people. The general feeling amongst the local population and the local government is that, the Central force personnel are unaware of the sentiments of the local people. Thus, the forces are slowly distancing away from local people and a feeling of mistrust is growing. The BGF should give up the mindset that, everyone living in the border region is a criminal. They must imbibe the idea of involving the local community in border guarding.

The widening divide between BGF and population in bordering areas is cause of concern, since effective border guarding is not possible without community support. It is, therefore, of paramount importance that, BGFs evolve ways and means, whereby people develop a feeling of attachment toward them. The community should serve as force multiplier in border management. Once the local population along the bordering areas is integrated in the mainstream, a certain amount of moral responsibility would automatically come in. The realistic 'community's participation in India's border management' can be achieved only thereafter.

11. Explain the meaning of investment in an economy in terms of capital formation. Discuss the factors to be considered while designing a concession agreement between a public entity and a private entity.

Approach

1. *Briefly discuss the concept of Capital formation and its importance in the economy. (40 words)*
2. *Discuss the impact of investment in an economy in terms of capital formation. (70 words)*
3. *Briefly discuss concession agreements and factors to be considered while designing a concession agreement between a public entity and a private entity. (100 words)*
4. *Conclusion (40 words)*

Hints:

Capital formation is referred to all the produced means of further production, such as roads, railways, bridges, canals, dams, factories, seeds, fertilizers, etc. Investment in an economy in terms of capital formation refers to long term investment in an economy those aides in its multi-dimensional growth from industries to infrastructure, from physical infrastructure to digital infrastructure, from roadways, highways, and railways to waterways, and primary industry such as agriculture to the manufacturing industry.

Impact of investment in an economy in terms of capital formation

- **Infrastructure Development:** The development of roads, railways, bridges, canals, and dams help other sectors of the economy such as agriculture and industries.

    - It helps to develop the logistics sector due to the development of transport infrastructure which further eases the scope of doing business attracting further investment.

    - Development of the energy sector due to investment in capital formation in this sector helps to boost the economic development of a country.

- **Industrial Development:** Investment in the industrial sector in terms of the development of new industrial corridors, setting up of different types of industries, and investment in pre-existing industries help in economic development in the longer run.

    - It helps in the generation of employment and thus attracts human resources from across the globe helping the host countries in their human capital formation.

- **Development of key social sector:** The contribution of the industrial sector in the country's GDP provides additional resources to the government to invest in key social infrastructures such as health, education, and sanitation.

- **Development of agriculture:** Investment in agriculture machinery, seeds, fertilizers e.t.c helps in the overall development of agriculture for a longer period.

- For a country like India, where more than 62% of the population directly or indirectly depends on agriculture, long term investment will help to develop this sector.

- **Concession agreement:** A concession agreement is essentially a contract that gives a company the right to operate a specific business within a government's jurisdiction or on another firm's property

GS SCORE *Hints: UPSC Mains 2020*

- Concession agreements often involve contracts between the non-governmental owner of a facility and a concession owner, or concessionaire.

- The agreement grants the concessionaire exclusive rights to operate their business in the facility for a stated time and under specified conditions.

  – **For Example:** Public-Private Partnership (PPP) model is a type of concession agreement between a public entity and private parties.

Factors to be considered while designing a concession agreement between a public entity and a private entity

- **Purpose:** The purpose for which the concession agreement between a public entity and a private entity is being designed must be fulfilled.

- **Profitability:** The project must be profitable from the government's point of view. However, adequate profit must be given to private entities to run the projects.

- In the case of social infrastructure projects, viability gap funding must be done for rapid and successful implementation of the project.

- **Viability**: The project must be viable and fulfill its purpose in long run. Sufficient operations and/or maintenance component must be present in the agreement.

- **Measurement of the performance of private partners**: The success of concession arrangements often depends on the ability of the private partner, to manage the risks.

- The success of the project solely or largely dependent on the performance of the private sector in these types of projects. Hence these agreements must have the clause of measurement of performance of private partner.

Conclusion:

Capital formation is an important factor that is responsible for the development of an economy. It helps the overall development of infrastructure as well as the economy of a nation. Further, concessional agreements are vital components of today's economic setup and must be made attractive to private entities to garner maximum investment in the infrastructure sector. These steps will help India to achieve the $5 trillion economy target by 2024.

12. Explain the rationale behind the Goods and Services Tax (Compensation to states) act of 2017. How has COVID-19 impacted the GST compensation fund and created new federal tensions?

Approach

1. Discuss the rationale behind the GST act of 2017 (70 words)
2. COVID-19 impacted the GST compensation fund and created new federal tensions (140 words)
3. Conclusion (40 words)

Hints:

The rationale behind the GST Act of 2017

- The concept of Goods and Services Tax came in 2005 when the Vijay Kelkar-led task force submitted its report and recommended the replacement of all indirect taxes with GST.

- The dream became a reality when the new tax was introduced at the midnight of June 30 and July 1, 2017.

- It was introduced as the biggest tax reform for indirect taxes. GST is a comprehensive, multi-stage, destination-based tax that is levied on every value addition.

- It is a single domestic indirect tax law for the entire country.

- In the earlier indirect tax regime, there were many indirect taxes levied by both the state and the centre.

- With the previous tax system, there were multiple taxes added at each stage of the supply chain, without taking credit for taxes paid at previous stages.

- As a result, the end cost of the product did not clearly show the actual cost of the product and how much tax was applied. That cascading structure was too complex and inefficient.

COVID-19 impacted the GST compensation fund and created new federal tensions

As the Covid-19 pandemic hit the globe, India's botched response resulted in becoming one of the worst impacted countries economically. This was a federal crisis like no other. The coronavirus pandemic severely affected economy. The Goods and Services Tax (GST) revenue collection was impacted by nationwide lockdown. The shortfall in the tax collection was estimated at [1] 2.35 lakh crore, for fiscal 2021

- This in turn impacted GST compensation to states. The relation between the Centre and the states has reached its nadir with the controversy over the GST compensation payment.

- However, the Union government showed an unwillingness to borrow the necessary amount and make it available to the cess fund.

- It was feared that such a large borrowing will push up the interest rate. Then the solution will be to monetize the debt. That's what governments all over the world were doing.

- Also, it was much more convenient for the Centre to borrow to meet the shortfall in the cess fund. The cost of borrowing by states would be higher by 1-2 percentage points. The states' fiscal deficit ceiling would have to be raised.

Conclusion:

Analyzing the situation, it seems that it is Far from the "co-operative federalism" that was promised, it appears that this coercive fiscal pressure may undermine the basis of any federalism at all, and in the future, it will impact the center- state cooperation.

13. What are the major factors responsible for making rice-wheat system a success? In spite of this success how has this system become bane in India?

> ### Approach
>
> 1. Briefly introduce the Rice-Wheat cropping system. (30 words)
> 2. Describe the factors responsible for the growth of rice-wheat system. (80 words)
> 3. Describe the issues related with the rice-wheat cropping system. (110 words)
> 4. Conclusion (30 words)

Hints:

The rice-wheat rotation is the principal cropping system in south Asian countries that occupies about 13.5 million hectares in the Indo-Gangetic Plains of which 10 million hectares are in India. This system covers about 33% of the total rice area and 42% of the total wheat area and account for one quarter to one third of the total rice and wheat production. This cropping system is dominant in most Indian states, such as Punjab, Haryana, Bihar, Uttar Pradesh and Madhya Pradesh, and contributes to 75% of the national food grain production.

Major factors responsible for making rice-wheat system a success:

- Although this is an irrigated cropping system yet yield are dependent on climatic situation in India mainly on south west monsoon.

- Green fodder is easily available in rice-wheat cropping system and this in turns helps to support large livestock population.

- With the introduction of improved high yielding, input responsive, short duration rice and wheat varieties, the rice-wheat pattern became feasible and saw both crops grown in the same year.

- In this pattern, rice is grown during the summer months followed by wheat in the winter months. It is now found as a major system throughout the IGP. Both crops are grown in one calendar year.

- The environmental requirements for the growth and development of both rice and wheat crops are contrastingly different. Rice grows best under stagnant water conditions, while wheat requires a well-pulverized soil with a proper balance of moisture, air and thermal regime.

- A dominating feature of the rice-wheat cropping system is the annual conversion of soil from aerobic to anaerobic and then back to aerobic conditions.

- This post green revolution technology will depend on farmer adoption and investment. Increasing and improving stakeholder participation in experimentation and fine-tuning of the technology will be a key to success.

- Irrigation is a common feature of this system either from extensive surface canal systems or from shallow wells and tube wells .Rainfed rice-wheat also exists, but the majority of farmers apply at least one irrigation for wheat and many a full irrigation schedule.

Issues related to Rice-wheat cropping system.

- **Declining underground water table**: The excessive pumping of ground water for irrigation purposes in intensively cultivated areas of Punjab, Haryana and Western Uttar Pradesh has caused lowering down of the ground water table in certain pockets. Declining water tables not only raise production costs due to higher energy requirements for pumping water from greater depths but such rapid rates of decline spark serious questions about the long-term sustainability of rice-wheat system itself in these areas.

- **Diverse weed flora:** Diverse weed flora and excessive weed pressure is an important issue in the way to sustainable agriculture. Due to intensive cultivation of rice–wheat sequence, the weed flora simplified with grasses. Weeds compete with the main plants for light, water and nutrients and in turn decrease overall land productivity of the system as a whole.

- **Ground water pollution:** Excessive use of the fertilizers/insecticides in RWCs pollutes the underground water quality. Application of this poor quality water to the agricultural and dairy sector leads to emergence of several severe diseases in animals and decreased the grain quality which ultimately affect the human health.

- **Outbreak of diseases and insect-pest**: Both wheat and rice crops are grown under lavish environment. The green crops with higher dose of N-fertilizers and wet conditions because of frequent irrigations are the paradise for the outbreak of insect-pest and diseases.

- **Degrading soil structure:** Rice is conventionally established through tillage under wet conditions with an aim of reducing percolation losses, ease transplanting and suppress weeds. However, its negative effects through structural degradation on upland crops are of concern. Apart from extensive labour requirement repeated puddling of coarse and medium textured soils in the state has led to the sub-surface compaction which has been proving detrimental for the upland crops like wheat.

- **Unsustainable practices:** Slow agricultural growth is emerging as a concern for government and policymakers as two-thirds of India's people depend on rural employment for a living. The current adopted agricultural practices are neither economically nor environmentally sustainable.

- **Residue management:** On farm residue management be the major issue in the prevailing RWCS. Among rice and wheat straw residue, wheat residue is used in the animal husbandry sector but

the higher silica content in rice straw make it inappropriate to be used in the dairy sector. Also farmers generally burnt the rice residue on to their fields to get rid of it and to ensure timely sowing of the wheat crop as delayed sowing decreases the final grain yields.

- **Labour shortage:** Rice–wheat cropping system is water-, energy-, capital- and most importantly labour intensive as transplanting, spraying and harvesting of paddy require intense labour. Labour shortage is an emerging issue in the prevailing Rice- wheat cropping system(RWCS) due to narrow window period and legal binding to transplant paddy

- Rice-wheat cropping system is known for plenty of **methane generation** and its contribution to global warming.

Conclusion:

Rice-wheat cropping system in India has contributed immensely to fill the increasing empty stomachs but has consequently led to many sustainability issues. Hence, alternate tillage and establishment methods must be invented, tested and recommended for the sustainable establishment of rice–wheat cropping system as a whole including the intervening period so that land and water productivity, soil health and environment must be improved for overall lifting of the livelihoods of the farmers.

14. Suggest measures to improve water storage and irrigation system to make its judicious use under depleting scenario.

> ### Approach
>
> 1. *Briefly introduce irrigation system and its importance. (40 words).*
> 2. *Discuss various types of water storage system and irrigation system and its importance. (90 words)*
> 3. *Discuss the measures to improve the judicious use of these irrigation system. (80 words)*
> 4. *Conclusion (40 words).*

Hints:

India is a country whose majority proportion of economy is agriculture based, but the diverse soil and moisture content in the soil makes irrigation as a needed aspect. To minimize dependence on monsoon which is being erratic, development of irrigation becomes essential. For instance, farmers in Odisha, Bihar are poverty stricken due to lack of irrigation in farm fields. Judicious use of irrigation enhances the productivity thus raising the yield per hectare. Like China in the same plot produces 3 time more crops than India due to its efficient irrigation. Also the country's economic, social and agricultural background makes it utilize the prospect promised by irrigational practices. This artificial means to fulfil the water and moisture requirement of crops is important for India.

Some important storage systems in India:

- **Wells:** Irrigation by wells is present in India from the time immemorial. In 1950-51, there were around five million wells and now, their number has been increased to about 12 million. Uttar Pradesh has the largest area of land under good irrigation, followed by Rajasthan, Punjab, and Madhya Pradesh

- **Tube wells:** Tube wells are deeper well from which water is lifted through pumping set operated by an electric motor or a diesel engine. Tamil Nadu with around 11 lakh tube wells has the largest number in the country followed by Maharashtra,

- **Tanks:** They are commonly used in Andhra Pradesh, Deccan Plateau, Maharashtra, Karnataka, and Tamil Nadu. Irrigation through tanks offers a host of benefits such as providing drinking water for rural communities and livestock, replenishing groundwater levels, conserving top-soil and others.

- **Canals:** In India, canals are the main source of irrigation. Canals are big water sources or channels derived from rivers to provide water to places far away from the river.

GS SCORE

Ways to improve water storage.

Reduce conveyance losses by lining channels or, preferably, by using closed conduits.

Reduce direct evaporation during irrigation by avoiding midday sprinkling. Minimize foliar interception by under-canopy, rather than by overhead sprinkling.

Reduce runoff and percolation losses due to over irrigation.

Reduce evaporation from bare soil by mulching and by keeping the inter-row strips dry.

Reduce transpiration by weeds, keeping the inter-row strips dry and applying weed control measures where needed.

Some important irrigation system in India:

Surface Irrigation

- Surface irrigation is the creation and distribution of water in an area by way of the gravity flow of water over the soil surface.

- The soil acts as the developing medium in which water is saved and the conveyance medium over which water flows as it spreads and infiltrates.

- Common floor irrigation structures used are rill irrigation, border or furrow irrigation.

Subsurface Irrigation

- Subsurface irrigation makes use of a community of polyethylene pipes positioned just beneath the floor's surface to use disinfected effluent inside the root area of plants, preventing airborne drift and declining runoff.

- This method of irrigation requires much less protection than surface irrigation, and there may be additionally much less hazard of surface saturation and effluent runoff.

- By decreasing the threat of human contact, it additionally drastically reduces public health risks.

Drip Irrigation

- Drip irrigation is the most efficient and recommended water and nutrient delivery system for growing crops.

- It helps to deliver water and vitamins directly to the plant's roots region accordingly the right and time, thereby each plant receives precisely what it desires, whilst it wishes it, to grow optimally.

- With this method of irrigation, farmers can produce higher yields even as saving on the water as well as fertilizers, electricity and even crop protection merchandise.

Sprinkler Irrigation

- Sprinkler Irrigation is a technique of applying irrigation water that is similar to rainfall.

- Water is distributed through a gadget of pipes generally by way of pumping.

- It is then sprayed into the air and irrigated complete soil surface via spray heads so that it splits up into tiny water drops which fall to the floor.

Important measures to improve water storage and irrigation system to make its judicious use under depleting Scenario:

- **Increase cropping Intensity:** The rainfed areas are mostly single cropped with scanty rainfall, prone to frequent droughts, soil erosion, and characterized by fragile pasture lands**. Presently 76% of agricultural** land in the country remains unused for half of the productive period due to lack of access to meet the crop water requirement.

- Large public and private investment for expanding the irrigation system to accelerate agricultural growth and to meet the needs of food security;

- Improvement in the utilization of irrigation potential and expansion of rural electrification in the eastern region and replacement of high-cost diesel pump sets.

- The original **Gadgil formula**, which, earmarked 10 per cent of the total resource to the State Plans for major and medium irrigation and power projects should be revived;

- A major part of saving of fertilizer subsidy be given to States as grant for irrigation expansion.

- Suitable incentives be extended for advancing hi-tech irrigation systems like the microprocessor-based drip irrigation technology that has proven ability to save **25 per cent chemical fertilizers, halve the water used and nearly double the yields;**

- Sprinkler device is a specific irrigation system, designed to make sure maximum water saving, combining excessive pleasant, affordability and simplicity of installation

- Farmers stakes in irrigation work be raised by conferring on them some degree of. Co-ownership the irrigation system; and

- A comprehensive watershed management plan need to be formulated and effectively implemented.

- **Best Utilization of Rain Water:** By having the surface irrigation systems, helps to shape your farm in a way to where natural water flow reliably irrigates your plants. Because of this reason, surface irrigation plots are very effective at making use of rainwater; the land has already been optimized for water flow.

- The Government has created a dedicated **Micro Irrigation Fund with NABARD**. This fund aims to facilitate the States in order to mobilize the resources for expanding coverage of Micro Irrigation in the country.

- **Rainfed Area Development Programme (RADP)** is an initiative which aims to **increase agricultural productivity** of rainfed areas in a sustainable manner by adopting appropriate farming system-based approaches.

Conclusion:

The agriculture being an important of Indian economy and society, so irrigational practices and its element should be utilized and developed wisely keeping in mind long term requirement and sustainability. Community based scheme in the region with less or no irrigation should be indeed targeted to provide irrigation. Drip irrigation or sprinkler system to be promoted. Schemes like **per drop more crop** are a good step. Also Assured irrigation is important for diversification to **high value crops and doubling of farm income by 2022.**

15. COVID-19 pandemic has caused unprecedented devastation worldwide. However, technological advancements are being availed readily to win over the crisis. Give an account of how technology was sought to aid management of the pandemic.

Approach

1. *Briefly discuss role of technology in a pandemic and epidemic. (50 words)*
2. *Discuss the Role of technology in COVID-19 management and mitigation of its impact. (150 words)*
3. *Conclude with importance of technology on our lives and how will it change the way of life in post-pandemic era. (50 words)*

Hints:

Epidemics and pandemics such as SARS, H1N1, Ebola and now COVID-19 have been threatening the human race time and again. COVID-19 pandemic, which has impacted the whole world, has tested the technological expertise of the human civilization very well. It has transformed the lifestyle of individuals as well as the society. However, technology has countered the pandemic and remarkably

GS SCORE

reduced its impact on the human civilization. Technology has helped to prevent the spread, educate, warn, and empower those on the ground to be aware of the situation.

Role of technology in COVID-19 management and mitigation of is impact

- **Fighting misinformation:** Misinformation about the number of fatalities, diagnosis and treatment options, vaccines, medicines, government policies, etc., created more panic and anxiety among the population during lockdown.

- The result was widespread leading to chaos, panic buying, hoarding of essential commodities, price rise, violence on the streets, discrimination, conspiracy theories, and so on.

- Companies like Google, Facebook, and YouTube worked tirelessly to guide people to the right, verifiable information such as that published by WHO or local authorities and government.

- It led to delivery of accurate information available to everybody and a transparent scenario created and the people can be informed about the right steps to take.

- **Finding Drugs**: Artificial Intelligence is playing important role in suggesting components of a vaccine by understanding viral protein structures, and helping medical researchers to invent vaccine for COVID-19 at a greater pace.

- **For Example:** Google DeepMind has invented Alpha Fold which is essentially a cutting-edge system that predicts the 3D structure of a protein based on its genetic sequence.

- **Increasing traceability and transparency:** Technologies such as mobile, Artificial Intelligence and Machine Learning have been used for clear messaging to the populace which is critical to make sure they are informed and reminded to use appropriate precautions.

- **For example:** Microsoft Bing launched an interactive COVID-19 map to provide widespread disease news.

- Social platform like TikTok partnered with WHO on COVID-19 to help keep their users knowledgeable with correct, timely facts, along with a live stream from the WHO where

- users will be able to ask questions and seek answers.

- **Facial recognition and Big Data Analysis:** Facial Recognition coupled with Big Data Analysis helped in quickly identifying infected individuals.

- It helped to connect with them and track person who came in contact with them. Facial recognition technologies along with data can accurately identify people even if they are masked.

- **Contact-less movement and deliveries through autonomous vehicles, drones and robots**enabled free flow of goods and services.

- It includes Self-driving cars, drones; robots can all help at a time when the need is to avoid human contact.

- Robots have been used for delivering grocery, cooking means, sterilizing hospitals and patrolling the streets.

- Drones have been used for food deliveries, tracking population, carrying test kits and medicines to quarantine locations, thermal imaging to identify infected people, spraying disinfectant.

- **Body Temperature monitoring:** The wireless thermometer guns and other similar infrared body temperature measuring devices have become the most important medical equipment during pandemic.

- These equipments were used in to measure body temperature without coming in contact with others.

- **Remote Working Technologies:** Remote working technologies helped in maintaining social distancing by enabling people to work from home.

- It also enabled IT companies and other technology sector to work without fear during pandemic days.

- Advancement in vaccine technology- Technological advancement in the area of virology has helped world to develop vaccine as early as possible which was not the case in 50's.

Conclusion:

COVID-19 pandemic testified the efficiency of emerging technologies and signified their role in our day to day life. It has helped in effective management of pandemic during lockdown while reducing the impact of pandemic on human lives. It has also proved the efficiency of 'Industry 4.0' and future course of human civilization characterized by 'Digital Education', 'E-Pharmacy and consultation', 'Remote working', and most important sustainable development.

16. Describe the benefits of deriving electric energy from sunlight in contrast to the conventional energy generation. What are the initiatives offered by our Government for this purpose?

Approach

1. *Basic introduction on the concept of obtaining electric energy from sunlight along with its benefits. (60 words)*
2. *Discuss some disadvantages of obtaining electric energy from conventional sources. (60 words)*
3. *Brief about initiatives offered by our Government for this purpose. (90 words)*
4. *Way forward. (40 words)*

Hints:

It has been known for more than 150 years that light can have an effect on the electrical properties of some materials. This is called the photoelectric effect. In 1921, Einstein received the Nobel Prize for his work explaining this. Photovoltaic cells are based on a related phenomenon called the photovoltaic effect, and they convert light directly into electricity.

Benefits of obtaining electric energy from sunlight

1. **Impact on the Environment**: Solar energy has the least negative impact on the environment compared to any other energy source. It does not produce greenhouse gases and does not pollute the water.

2. **Reduce Your Energy Bill**: Generating your own electricity means that you will be using less from the utility supplier. This will immediately translate to savings on your energy bill. Plus, you can also make money by selling the unused electricity, which you have generated, back to the grid.

3. **Solar Energy Is Applicable Everywhere**: As long as there is sunshine, solar energy can be deployed anywhere. This is particularly useful for remote regions with no access to any other source of electricity. There is a vast amount of people around the world with no access to electricity.

4. **Less Electricity Lost During Long-Distance Transport**: Having solar panels on the roof or in the yard significantly reduces this distance, therefore increasing the efficiency of the solar panels.

5. **Improves Grid Security**: The grid is less vulnerable to blackouts if there are many power plants which are spread out. A grid with high penetration of solar energy has thousands of energy production centres which are widely spread out. This improves the security of the grid in case of overload, natural or human-caused disasters.

Disadvantages of obtaining electric energy from conventional sources

1. **Pollution**: The primary drawback of these conventional sources is they purpose excessive pollutants. The burning of firewood and fossil fuels result in air pollutants. This may be prevented by means of using those non-conventional resources.

GSSCORE

2. **Exhaustible**: The major problem while the use of conventional sources in particular fossil fuels is that they may be exhaustible resources. It takes tens of millions of years for them to be renewed and replenished. But non-traditional resources are renewable resources that do not get exhausted.

3. **Risky:** Non-conventional power extraction is safer. Many injuries arise at the same time as extracting strength from mines.

4. **High value**: The extraction of these electricity assets is very pricey both economically and environmentally. The cost of electricity production and extraction is lots lesser for non-traditional resources if the initial cost of establishment is borne.

Initiatives offered by our Government for this purpose

1. **Jawaharlal Nehru National Solar Mission**: The aim of JNNSM mission is not limited to offering large-scale grid-connected power but also transform India's rural economy. The quick spread of solar lighting systems, water pumps, and other solar power-based applications will change India's rural economy. The mission is to expand and establish India as a global leader in solar energy sector.

2. **Rooftop Scheme**: Under the rooftop scheme executed by SECI (Solar Energy Corporation of India), 200 MW of projects has been allocated, out of which 45 MW of capacity have been commissioned. Addition to this, special schemes including 73 MW for warehouses and 50 MW for the CPWD (Central Public Works Department) have been launched.

3. **Solar Park Scheme**: The Solar Park is a concentrated zone of development of solar power generation projects. The implementation agency would be SECI on behalf of Government of India. The state will be able to reduce its carbon footprint by avoiding emissions equivalent to the solar park's generated capacity.

4. **VGF (Viability Gap Funding) Scheme**: VGF support will be provided for setting up of grid-connected solar PV projects of a minimum 2000 MW capacity by solar power developers on build own operate basis.

5. **UDAY Scheme:** UDAY or Ujjwal Discom Assurance Yojna was launched in November 2015 as a revival package for electricity distribution companies of India initiated by the Government of India with the idea to find permanent solar power solutions to the financial mess that the power distribution was facing at that time. It aims at reforming the power sector, operational improvement, and development in renewable energy, reduction of cost of generation of power, energy efficiency, and conservation.

Conclusion:

Solar power is an immense source of directly useable energy and ultimately creates other energy resources: biomass, wind, and hydropower and wave energy. Most of the Earth's surface receives sufficient solar energy to permit low-grade heating of water and buildings, although there are large variations with latitude and season. At low latitudes, simple mirror devices can concentrate solar energy sufficiently for cooking and even for driving steam turbines.

17. What are the key features of the National Clean Air Programme (NCAP) initiated by the Government of India?

> *Approach*
>
> 1. *The answer should include the brief introduction of the level of pollution in India. A brief overview can be given of the NCAP along with the other commitments of India. (60 words)*
> 2. *Then the features of the programme can be discussed. (130 words)*
> 3. *Conclude with some of the challenges of the programme along with the measures. (60 words)*

Hints:

According to the, World Air Quality Report 2019,the 21 Indian cities are among the world's 30 most polluted cities of the world and the level of the pollutant PM 2.5 and PM 10 are often well above the World Health Organisation's recommended level of exposure and this leads to serious respiratory problem for those exposed to it. In pursuance of its commitment, towards the 2015 Paris agreement as the inflection point, where India committed to cut the green house gas emissions intensity of its GDP by 33-35 per cent over the 2005 levels by 2030, the Indian Government started the National Climate Action Programme (NCAP).

The National Clean Air Programme is a pollution control initiative that was launched by the Ministry of Environment with the intention to cut the concentration of coarse PM 2.5 and PM 10 by at least 20% in the next five years, with 2017 as the base year for comparison. It is a national level strategy to tackle the air pollution problem across the country in a comprehensive manner.

Features of the NCAP

- **Time bound strategy:** The National Clean Air Programme (NCAP) is a long-term, time-bound, national level strategy to tackle the air pollution.

- **Reduction in Particulate Matter**: It targets to achieve 20% to 30% reduction in Particulate Matter concentrations by 2024 keeping 2017 as the base year for the comparison of concentration.

- **Non-attainment cities:** Under NCAP, 122 non-attainment cities have been identified across the country based on the Air Quality data from 2014-2018.

- **City specific plans:** The city specific action plans have been prepared for strengthening the monitoring network, reducing vehicular/industrial emissions, increasing public awareness etc.

- **Implementation of the plan:** Implementation of the city specific action plans are regularly monitored by Committees at Central and State level namely Steering Committee, Monitoring Committee and Implementation Committee.

- **Monitoring of plans:** Air quality of cities is monitored by State Pollution Control Boards which publishes their results from time to time. Some Smart Cities have established Integrated Command and Control Centres (ICCCs) which are also connected to Air Quality Monitors (AQMs) for effective monitoring.

Conclusion:

The Programme is aimed at reducing the level of pollution but a number of challenges dilute the effectiveness of the programme. The lack of strong legal backing to take action against non-implementation, lack of sector wise specific targets, a meager budget allocation and lack of clarity of funding provisions are some of the issues which reduce the efficiency of the programme. Recently, NGT also urged government to reduce the time line of the programme from 2024 along with the raise in the reduction targets of Particulate matter from 20%-30%. The better results could be obtained only after removing all the challenges and adopting better implementation measures.

18. *Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach.*

> ### Approach
>
> 1. *Brief introduction on disaster management. (40 words)*
> 2. *Discuss recent measures initiated in disaster management by the Government of India. (90 words)*
> 3. *Drawbacks of previous measures taken. (80 words)*
> 4. *Conclusion. (40 words)*

GS SCORE

Hints:

Disaster Management can be defined as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.

Recent measures related to disaster management show that the government now deals with the disasters in a pre-emptive-cum-proactive way rather than a reactive way:

- India presented a practical approach and roadmap with the launch of a global Coalition for Disaster Resilient Infrastructure (CDRI) to make the infrastructure resilient in the face of disasters.

- Indian Coast Guard with the assistance of ICG Remote Operating Centres (ROC) and Stations (ROS), NAVTEX warning (Navigational Text Message) and ISN (International Safety Net) activated one week in advance by Maritime Rescue Co-ordination Centres (MRCCs) prevented the loss of fishermen lives and reduced impact from Cyclone Amphan and Nisarga.

- IMD is to launch a dynamic, impact-based cyclone warning system aiming at minimising economic losses. NDMA took up a project named National Cyclone Risk Mitigation Project (NCRMP) in which a Web-based Dynamic Composite Risk Atlas (Web-DCRA) would be developed.

- Building dedicated institutions like the National Fire Service College (NFSC) and the National Disaster Response Force (NDRF) Academy is about how to control a situation rather than just respond to it.

- NDRF is said to have achieved all benchmarks under Sendai Framework for Disaster Risk Reduction.

- Capacity building of locals- Govt has focused on training locals as they are first to respond.

Recent measures initiated in disaster management by the Government of India

1. **Housing for all programme and smart cities**: All development sectors must imbibe the principles of disaster risk management. This will ensure that all development projects airports, roads, canals, hospitals, schools; bridges are built to appropriate standards and contribute to the resilience of communities they seek to serve.

2. **Jan DhanYojana and the Suraksha BimaYojana**: work towards risk coverage for all – starting from poor households to small and medium enterprises to multi-national corporations to nation states.

3. **Involvement and leadership of women**: encourage greater involvement and leadership of women in disaster risk management. Women are disproportionately affected by disasters. They also have unique strengths and insights.

4. **Invest in risk mapping globally:** For mapping risks related to hazards such as earthquakes we have widely accepted standards and parameters. Based on these, in India, we have mapped seismic zones, with five as highest seismic risk and two as low risk.

5. **Leverage technology:** to enhance the efficiency of our disaster risk management efforts.

6. **Network of universities:** develop a network of universities to work on disaster issues. After all, universities have social responsibilities too. Over the first five years of the Sendai Framework, we should develop a global network of universities working together on problems of disaster risk management.

7. **Build on local capacity and initiative:** The task of disaster risk management, particularly in rapidly growing economies, is so huge that formal institutions of the state can at best be instrumental in creating the enabling conditions.

Drawbacks of previous measures

1. **Fragile Institutions**: The National Policy on Disaster Management, prepared by the National Disaster Management Authority (NDMA), approved in 2009 was formulated with a vision to

build a safe and disaster resilient India. Central, state and district level authorities are established. Also Disaster Response Fund and Disaster Mitigation Fund were set up. But all these are not active and well operated. We must explore ways to ensure the efficiency and effectiveness of delivery of services, minimizing inordinate delays, red tape, pressure for excluding real victims and accommodating false claimants.

2. **Weak compliance of policies**: The follow up actions expected from nodal agencies in preparing plans and corrective actions to address the critical gaps in the existing policies are not initiated. Community based organizations and NGO's can play an important role in creating a level playing field for victims affected by disasters.

3. **Systemic inefficiencies influencing process**: The random audits of proposals on affected areas and fixing the accountability for financial losses on erring officials is the reason.

4. **Need to adopt innovative systems, techniques and technologies**: Some of them are Geographical Information System (GPS), Global Positioning System (GPS), Global Pocket Radio Service (GPRS), Remote Sensing, and Voice over Internet Protocol (VOIP), Radio over Internet Protocol (ROIP), Scenario Analysis &Modelling, Digital Elevation Models and Bathymetry for tsunami, Early warning systems, Doppler radar etc. Information in the local dialects will be more helpful. A judicious mix of traditional knowledge with technology is required.

Conclusion:

The current "non-system" for providing information for disaster management is not effectively utilizing a wealth of information that resides with various organizations. Existing technologies could deliver to disaster managers important new information products that could save lives, reduce damage to property, and lessen the environmental impacts of natural disasters. Continued improvements in technology should help make information more widely, quickly, and reliably available and at less cost.

19. *What are the determinants of left-wing extremism in Eastern part of India? What strategy should Government of India, civil administration and security forces adopt to counter the threat in the affected areas?*

Approach
1. *Briefly introduce the Left Wing Extremism (LWE) and its rise (40 words)*
2. *Discuss Factors responsible for the rise of Naxalism in Eastern India and Current Scenario (90 words*
3. *Discuss the Potential Strategy by Government ,Civil Administration and Security Forces to Counter LWE. (80 words)*
4. *Conclusion (40 words)*

Hints:

Left Wing Extremism or Naxal Movement has been the source of extreme violence in some parts of the country specially in Eastern part. These extremists are internally waging wars against the state. It is considered to be the most important security concern. These extremist movements have disconnected several tribal villages from the national main stream. They want abolition of state to establish the rule of people. These extremists attack the symbols of the country's power such as the police, schools and other government institutions.

Spread of Naxalism

The Spread occurred in three phases –

- **The first phase** started in Darjeeling in West Bengal from where it spread to Odisha, Bihar, Andhra Pradesh and Madhya Pradesh. The phase ended with the Emergency period seeing the arrest of most of the Maoist cadres.

G|SSCORE *Hints: UPSC Mains 2020*

- **The second phase** started when the movement emerged in a more violent form after the emergency and spread from West Bengal again to Bihar, Odisha, Andhra Pradesh and Chattisgarh.

- **The third phase** started with the formation of CPI (Maoist) in 2004. Thus Naxalism spread in **eastern India** often referred to as the '**Red Corridor'**, a narrow but contiguous strip connecting **Karnataka and West Bengal through Jharkhand, Chattisgarh, Odisha, Telangana and Andhra Pradesh.**

Factors responsible for the rise of Naxalism in Eastern India

Rise of Naxalism is attributed to the gross lack of development even after being mineral-rich areas combined with other socio-economic problems. These can be summarised as

- **Developmental Deficit:** the Naxal affected areas face rampant poverty and unemployment. The areas also lack education and health facilities. There is also a deficit of infrastructures such as roads, bridges and communication facilities.

- **Governance Deficit:** there is a lack of routine administration with incompetent, ill-trained and poorly motivated personnel. There are corruption and mismanagement of government schemes and poor implementation of special laws. Electoral politics is perverted and the working of local government is unsatisfactory.

- **Social Exclusion and Alienation:** there are human rights violations and the dignity of life is not ensured. There is a disconnect with the mainstream society which all leads to the discontent against the government.

- **Jal-Jangal-Jameen:** the issues of land, forest and water rights. There is an evasion of land ceiling laws and unlawful encroachment and illegal occupation of community lands. The traditional rights are not recognised and there is unfair land acquisition without any compensation or proper rehabilitation. The tribe- forest relations are also disrupted.

Such conditions make it easier for an ideology like Maoism to take root. The government and the capitalist class are identified as the perpetrators of the backwardness of the region and the youth are motivated to take up arms against them.

Current Situation

- Events of Left Wing Extremism (LWE) violence came down from **2258 in 2009 to 833 in 2018**.

- The number of affected districts have also come down to **60 in 2018 from nearly 100 in 2010.**

- Official data also reveal that it is on a **decline in Bihar and Odisha with Odisha declaring almost 10 districts free from Naxalism**. However, Odisha Chief Minister still flagged it as a critical menace that needs close monitoring.

- **Developmental efforts and security measures** are seeing success in eliminating the Naxal problem as more and more Naxalites are surrendering and giving up violence o join the electoral process.

Way forward

Developmental Strategy/Government Strategy/Civil administration

- Political security and accelerated Socio-economic development should be ensured in a holistic way.

- Better infrastructure like roads, electricity and communication to be installed.

- Potential youth should be weaned away from the ideology by the decentralised and participatory democratic process.

- There needs to be effective coordination between departments, police and security forces in implementing the development schemes.

- Psychological must be done to delegitimize the movement, change the public perception and engage with the civic society and NGOs to restore public faith in the government machinery.

- Measures to curb financial support to Naxal movement, peace talks, to promote proper criminal justice system, administration of forest laws etc should be taken.

Security Strategy

- **Hardcore Ideologues** should be sternly dealt with a policy of bullet against a bullet. These people do not want development and use the underdevelopment and governance deficit to achieve selfish goals and vested interests.

- **Common people and youth especially** should be weaned away from hardcoreNaxalites

- Some of the measures to be taken include – professional dominance by security forces, special training, modernisation of weapons and technical equipment, special forces along the lines of **AP Greyhounds model**, collective approach and police coordination by the states since it is an interstate issue, rationalisation of surrender policy etc.

Conclusion:

It is the belief of the Government of India that through a holistic approach focussing on development and security-related interventions, the LWE problem can be successfully tackled. However, it is clear that the Left Wing Extremists do not want root causes like underdevelopment to be addressed in a meaningful manner since they resort to targeting school buildings, roads, railways, bridges, health infrastructure, communication facilities etc in a major way. They wish to keep the population in their areas of influence marginalized to perpetuate their outdated and failed ideology. Consequently, the process of development has been set back by decades in many parts of the country under Left Wing Extremists influence. This needs to be recognised by the civil society and the media to build pressure on the Left Wing Extremists to eschew violence, join the mainstream and recognise the fact that the socio-economic and political dynamics and aspirations of 21st Century India are far removed from the Maoist world-view. Further, an ideology based on violence and annihilation is doomed to fail in a democracy which offers legitimate forums of grievance redressal.

20. Analyze internal security threats and trans-border crimes along Myanmar, Bangladesh and Pakistan borders including Line of Control (LoC). Also discuss the role played by various security forces in this regard.

> ### Approach
>
> 1. *Briefly discuss various security threats due to cross border activities along different international borders of India. (50 words)*
> 2. *Discuss security Threats to India's border along with Pakistan, Bangladesh and Myanmar and role played by security forces (160 words)*
> 3. *Conclude with need to deploy emerging 'state of art technologies' to secure India's borders. (40 words)*

Hints:

Myanmar, Bangladesh and Pakistan borders as well as 'Line of Control' have posed challenges to the Indian security forces in different aspects. Despite regular monitoring and fencing, there has been continuous infiltration of terrorists and trafficking of human, cattle drugs and arms across the border. These illegal and organized crimes activities have posed serious concerns pertaining to border management in India.

Security Threats to India's border along with Pakistan, Bangladesh and Myanmar and role played by security forces

- Nature of illegal activities varies from border to border. It is different along Pakistan Border while different along Indo-Myanmar border.

- **Indo-Pakistan Border:** India shares 3223 km of border with Pakistan. Illegal migration, infiltration of anti-national elements, smuggling of arms explosive and drug trafficking are some of the serious problems.

- Internal security threats along Pakistan border includes propping up of terrorist organizations in Jammu and Kashmir and Punjab.

- These illegal activities are instigated by Pakistan in order to help terrorist groups IN Jammu and Kashmir and Khalistani insurgents in Punjab.

- These terrorist groups often destabilize regional peace by creating ruckus such as bomb blasts and targeting civilians as well as government installations.

- The entire border with Pakistan is manned by the BSF except the Line of Control (LoC) in Jammu and Kashmir (J&K) which is manned by Indian Army with some BSF battalions under its operational control.

- Here, main aim of army and the BSF is to check physical expansion by Pakistani Army and check cross border infiltration and organized crime activities such as illegal arms and drug supply.

- The supply of drugs along Punjab section of border is rampant which is checked by BSF and state police jointly.

- **Indo-Bangladesh Border:** Mass migrations from Bangladesh into lower Assam, West Bengal and smuggling of consumer goods, fake Indian currency, arms for insurgent groups such as ULFA and cattle smuggling are main problems along Indo-Bangladesh border.

- The counterfeiting of currency notes is said to be pushed in order to destabilize India's economic growth while funding terrorist organizations.

- Illegal migrants who come through this route often poses threat to demographic composition of India and are easy prey of radical Islamist groups.

- These groups often radicalize them to carry out terror operations in the country.

- This border is guarded by Border Security Force (BSF). A long stretch of border is covered by water bodies which causes easy infiltration from Bangladesh Side.

- Recently, Supreme Court had ordered to fece the whole length of border with Bangladesh.

- **Indo-Myanmar Border:** The border with Myanmar is operationally active as several insurgent groups have secured sanctuaries for themselves in Myanmar despite the co-operation extended by the Myanmar's army.

- The cross border movement of Naga and Mizo insurgents for training, purchase of arms and shelter is a general threat in this area.

- Border management by Indian security forces due to difficult terrain obtaining in the area makes this border extremely challenging to manage.

- This border is manned jointly by the army and some units of the Assam Rifles.

Conclusion:

Rampant infiltration bid along different borders of India has resulted in increase in organized crime activities leading to terror attacks, counterfeiting of currency notes leading to weakening of domestic currency e.t.c. Government of India need to devise some of the 'State of Art' technologies such as LASER fencing, Infra Red detection sensors, facial recognition technology coupled Big Data Analysis to secure its international borders.