

UPSC MAINS 2016

GS PAPER - 3

Time Allowed: 3 hr.

Max. Marks: 250

1. How globalization has led to the reduction of employment in the formal sector of the Indian economy? Is increased informalization detrimental to the development of the country?
2. Women empowerment in India needs gender budgeting. What are the requirements and status of gender budgeting in the Indian context?
3. Pradhan Mantri Jan-Dhan Yojana (PMJDY) is necessary for bringing unbanked to the institutional finance fold. Do you agree with this for financial inclusion of the poorer section of the Indian society? Give arguments to justify your opinion.
4. What are 'Smart Cities'? Examine their relevance for urban development in India. Will it increase rural-urban differences? Give arguments for 'Smart Villages' in the light of PURA and RURBAN Mission.
5. Justify the need for FDI for the development of the Indian economy. Why there is gap between MOUs signed and actual FDIs? Suggest remedial steps to be taken for increasing actual FDIs in India.
6. Comment on the challenges for inclusive growth which include careless and useless manpower in the Indian context. Suggest measures to be taken for facing these challenges.
7. What is water-use efficiency? Describe the role of micro-irrigation in increasing the water-use efficiency.
8. What is allelopathy? Discuss its role in major cropping systems of irrigated agriculture.
9. Discuss the role of land reforms in agriculture development. Identify the factors that were responsible for the success of land reforms in India.
10. Give the vulnerability of Indian agriculture to vagaries of nature, discuss the need for crop insurance and bring out the salient features of the Pradhan Mantri Fasal Bima Yojana (PMGBY).
11. Give an account of the current status and the targets to be achieved pertaining to renewable energy source in the country. Discuss in brief the importance of National Programme on Light Emitting Diodes (LEDs).
12. Discuss India's achievements in the field of Space Science and Technology. How the application of this technology has helped India in its socio-economic development?
13. Why is nanotechnology one of the key technologies of the 21st century? Describe the salient features of Indian Government's Mission on Nanoscience and Technology and the scope of its application in the development process of the country.
14. Rehabilitation of human settlements is one of the important environmental impacts which always attracts controversy while planning major projects. Discuss the measures suggest for mitigation of this impact while proposing major development projects.

15. The frequency of urban floods due to high intensity rainfall is increasing over the years. Discussing the reasons for urban floods, highlight the mechanisms for preparedness to reduce the risk during such events.
16. With reference to National Disaster Management Authority (NDMA) guidelines, discuss the measures to be adopted to mitigate the impact of the recent incidents of cloudbursts in many places of Uttarakhand.
17. The terms 'Hot Pursuit' and 'Surgical Strikes' are often used in connection with armed action against terrorist attacks. Discuss the strategic impact of such actions.
18. "Terrorism is emerging as a competitive industry over the last few decades." Analyze the above statements.
19. Border management is a complex task due to difficult terrain and hostile relations with some countries. Elucidate the challenges and strategies for effective border management.
20. Use of Internet and social media by non-state actors for subversive activities is a major security concern. How have these been misused in the recent past? Suggest effective guidelines to curb the above threat.

GS SCORE



UPSC GS MAINS PAPER - 3

HINTS

1. *How globalization has led to the reduction of employment in the formal sector of the Indian economy? Is increased informalization detrimental to the development of the country?*

Hints:

- Over recent decades, conditions for working people in developing countries have undergone a major transformation. This has been the substantial rise in the proportion of people engaged in what is termed “informal” employment, generating a broad trend toward “informalization” of labour market conditions in developing countries.
- Informal forms of employment include, for example, agricultural day labourers, urban street vendors, paid domestic work, or at-home producers of clothing or other manufactured goods. A high proportion of informal workers are self-employed. In most countries, women are disproportionately employed in such informal jobs.
- The promotion of success in export markets and the ability to attract foreign direct investment is a fundamental element of a neoliberal strategy. Maintaining low labor costs is generally regarded as a central feature—and often the single dominant element—for successfully promoting exports and multinational investment. Thus, in the name of encouraging trade and foreign investment, the explicit goal of government policy under this policy regime will be to limit the ability of workers to capture the benefits of productivity improvements as increases in employment income, to reduce social and legal protections, and to weaken workers’ bargaining power—that is, to induce workers to accept jobs with lower pay.
- The competitive pressures resulting from increasing an economy’s degree of international integration will further strengthen these tendencies. Furthermore, pressures to increase the productivity of currently employed workers will reduce the number of employment opportunities generated by a given level of output growth, thereby limiting the growth of formal employment relative to informal employment.
- With the advent of globalization and resultant reorganization of production chains led to a situation where production systems are becoming increasingly atypical and non-standard, involving flexible workforce, engaged in temporary and part-time employment, which is seen largely as a measure adopted by the employers to reduce labour cost in the face of stiff competition. No doubt, it obviously indicates that these flexible workers in the new informal economy are highly vulnerable in terms of job security and social protection, as they are not deriving any of the social protection measures stipulated in the existing labour legislations. The insecurities and vulnerabilities of these modern informal sector labour are on the rise, as there is a visible absence of worker mobilization and organized collective bargaining.
- Informal work arrangements are able to flourish when workers have few alternative economic opportunities—that is, weak fall-back positions in bargaining situations with employers.

Considering only formal employment situations, the wage at which workers are willing to accept jobs will depend in large part on the other job opportunities available to them. As such, informalization will also place downward pressure on wages and working conditions in formal jobs as well. Thus, the process of informalization proceeds in part through a vicious cycle: a relatively high proportion of informal jobs make it increasingly difficult for workers to bargain for decent wages, working conditions and social protections, so that what had once been formal jobs become increasingly informalized over time.

2. *Women empowerment in India needs gender budgeting. What are the requirements and status of gender budgeting in the Indian context?*

Hints:

Gender Budgeting is a method of planning, programming and budgeting at different level of govt. administration that helps advance gender equality and women's right. Every Indian budget since 2005 has a statement that lists out schemes meant specifically for women and along with that many ministries also issue the GBS (Gender budgeting statement)

Status of Gender Budgeting:

In the last 10 years (2005-2015), if we see the gender budget percentage to the total Budget of the Central Government, it started with the lowest (2.79 per cent) in the year 2005 and increased to the highest level with (6.22 per cent) in the year 2011. But from the year 2012, the percentage of the gender budget saw reduction in the total Budget of the Central Government and in the present Budget (it is estimated at 4.5 per cent).

The Budget year 2005-06 was very significant for women in the country, as for the first time the 'Gender Responsive Budgeting' (GRB) was adopted. The GRB is a method of planning, programming and budgeting that helps advance gender equality and women's rights. It serves as an indicator of the government's commitment towards the above mentioned objectives. So far, 57 government Ministries/departments in India have set up Gender Budgeting Cells, which is a positive step and will bring improvement in the lives of the women in society. While the number of ministries and departments reporting in the GBS have reduced from 34 to 31 this year.

However, Gender Budgeting has faced many challenges and requires many major changes to make a meaningful impact.

1. Over the last ten years the allocations for women as a proportion of the total budget have remained constant at approximately 5.5 per cent.
2. It is relatively easy to identify specifically targeted programs for women from the budgets. However, these form less than 1 per cent of total budget. Therefore the real challenge of the gender budgeting exercise lies in the analysis of the remaining 99 per cent budget through a gender lens.
3. Gender disaggregated benefit incidence analysis can be a useful tool for analyzing the distributional impacts of public expenditure across gender.
4. The analysis of the revenue side of gender responsive budgeting is at the embryonic stage due to lack of gender disaggregated tax data, namely direct tax, and indirect tax user charges.
5. Effective Gender Budgeting requires data. Hence, it is necessary to put mechanisms in place for mandatory collection of sex disaggregated data. Further, incorporating gender perspective in expenditure and performance audit by CAG can prove a crucial steps in achieving the objective of gender budgeting.

The broad conclusion is that gender responsive budgeting, though it began as a promising fiscal innovation in India, has not translated effectively into policies that impact on women. GRB is not primarily an issue of additional resources for gender development, nor is it confined to specifically targeted programmes for women. Gender responsive budgeting is making the entire budgetary exercise more responsive to gender issues. India should deepen the gender responsive budgeting process by reprioritising the policies related to planning and budgeting through a gender lens to effectively translate them into better gender development.

3. *Pradhan Mantri Jan-Dhan Yojana (PMJDY) is necessary for bringing unbanked to the institutional finance fold. Do you agree with this for financial inclusion of the poorer section of the Indian society? Give arguments to justify your opinion.*

Hints:

- About 40 percent of Indian population still doesn't have access to formal banking system. In terms of numbers, the scheme has become an overnight success with its high-speed implementation even bagging a Guinness record. The government achieved this by pushing all government-owned banks to meet the targets.

- Jan Dhan is arguably the biggest-ever bank account opening drive India has ever witnessed and was designed to offer at least one basic bank accounts to every household, besides access to credit, insurance and pension facilities and offering financial literacy.
 - It also promised RuPay Debit card for every account holder, an inbuilt accident insurance cover of Rs 1 lakh and life insurance cover of Rs 30,000. Besides, the scheme also envisaged channelling all government benefits to the beneficiaries' accounts. The scope of the scheme was later expanded to offer other products too.
 - The scheme has, so far, managed to open 25 crore accounts, which have mobilized Rs 74,000 crore deposits approximately. Of this, about 14 crore accounts have been linked to Aadhaar numbers and 20 crore RuPay debit cards have been achieved issued to these account holders. The numbers indeed signify a remarkable achievement.
 - The whole process of subsidy reforms is built on the Direct Benefit Transfer (DBT) channel, based on the unique identity number, or Aadhaar awarded to each citizen. It holds particular importance for the government, and the success of its financial inclusion push under the JAM (Jan Dhan, Aadhaar and Mobile) trinity.
 - For sure, leakage in subsidy has been a grave concern for India's exchequer for years. Hence, linking bank accounts to a unique social identity number will help plug the spillage.
 - However, some other number reveals that financial inclusion may not be achieved by opening accounts alone. As despite Jan Dhan's record-breaking feats, basic savings account penetration in most states is still relatively low – 46 per cent on average and above 75 per cent in only 2 states (Madhya Pradesh and Chhattisgarh).
 - Comparing the reach of Jan Dhan with that of Aadhaar suggests that the unbanked are more likely to constrain the spread of JAM than the unidentified.
 - However, going by the latest government data, the number of zero-balance accounts has come down significantly since the scheme was launched to 24 per cent from about 45 per cent initially. It shows that even if accounts did received deposits initially, but later on they were mobilized.
 - MicroSave's numbers assess that nearly 56% of JDY customers have signed up for an insurance or pension scheme primarily due to its "excellent value proposition and low cost showing that the scheme is actually leading to financial inclusion, if not fully.
4. *What are 'Smart Cities'? Examine their relevance for urban development in India. Will it increase rural-urban differences? Give arguments for 'Smart Villages' in the light of PURA and RURBAN Mission.*

Hints:

Cities accommodate nearly 31% of India's current population and contribute 63% of GDP. Urban areas are expected to house 40% of India's population and contribute 75% of India's GDP by 2030. This requires comprehensive development of physical, institutional, social and economic infrastructure. All are important in improving the quality of life and attracting people and investment, setting in motion a virtuous cycle of growth and development. Development of Smart Cities is a step in that direction.

Smart Cities focus on their most pressing needs and on the greatest opportunities to improve lives. They tap a range of approaches - digital and information technologies, urban planning best practices, public-private partnerships, and policy change - to make a difference.

The share of 'urban' in India is expected to grow, both in terms of population and economy. However there are gaps in attaining the required conditions of liveability, fostering equity and inclusiveness and building urban resilience.

In terms of economic growth policy making in India, the supply of affordable housing and large enough public transportation networks is central to the growth prospects of any large metropolitan area. States need to prioritize the long-term development of these areas, with the Centre stepping in wherever they overlap across states.

Socio-economic imperatives are the key factors behind the rapid urbanization in India. Livelihood, security and prosperity are some prime movers. Ironically, cities, which on the one hand are considered the growth engines of economy, also attract poverty (socio-economically marginalized population) in large proportion. Consequently posh urban sprawls in Indian cities exist amidst impoverished habitats called slums where the poor inhabitants are condemned to live in sub-human condition. Reconciling growing affluence and abject poverty in cities is a difficult task too.

Formidable challenges exist in setting the urban trajectory on a path which is sustainable in the long term. The positioning of the Smart Cities Mission can be seized as an opportunity to address these challenges and attain the larger goals of urbanisation in the national development agenda. The areas of interventions that the Mission needs to focus on include:

- Establishing an Efficient Urban Management Systems
- Building Adequate Capacity of Urban Institutions and Local Governments
- The technology domain and its application in cities are developing at a fast pace.
- Achieving the Decentralization Agenda
- Minimizing Conflicts in the Urban Environment
- Creating Enabling Conditions for Inclusive and Equitable Urbanization

As discussed earlier, being smart is not just a feature, but a lifestyle aspect and it is deeply affected by the role of technology and its penetration and thus, the areas which are penetrated by the technology would be first to transform and Indian Rural areas are devoid of basic infrastructure and let alone the access to cutting edge technology and IT infrastructure. Thus, the given scenario and limited investment funds, it is difficult even to extend the good infrastructure, such as all-weather roads and 24 hours electricity supply to rural areas and thus, Smart Villages may be an attractive moniker, but not feasible in short-run. Similarly schemes like PURA and Rurban also acknowledge this prima-facie and focuses on providing basic facilities and services.

5. Justify the need for FDI for the development of the Indian economy. Why there is gap between MOUs signed and actual FDIs? Suggest remedial steps to be taken for increasing actual FDIs in India.

Hints:

Apart from being a critical driver of economic growth, foreign direct investment (FDI) is a major source of non-debt financial resource for the economic development of India. Foreign companies invest in India to take advantage of relatively lower wages, special investment privileges such as tax exemptions, etc. For a country where foreign investments are being made, it also means achieving technical know-how and generating employment.

Similarly, in the current scenario when domestic investment activity is less due to twin balance sheet phenomenon, FDI can act as a crowding-in factor and can boost investment by India's private sector too.

The Make in India week in Mumbai in 2016, resulted in investment commitments worth Rs.15.2 trillion across various Indian states. Of this, about 30% of the investments fall under the foreign direct investment (FDI) category. Similarly, each year in various summits various such very high investment commitments are made, but, they are far too much compared to the levels of FDI received by the country.

While MoUs (Memorandum of Understanding – a bilateral agreement between two entities expressing common intention & line of action) close to Rs 21 lakh crore were signed in the 2011 summit, a study by Gujarat state government shows that just above 1% of the promised investments have actually come in so far.

Thus, there is a huge gap between FDI commitments and actual FDI. There can be various factors for that. Promising FDI in each possible destination is a common practise to check government response and special considerations, this boosts FDI commitment several times then are really made.

Number of times, business cycle downturn or financial strain can prevent investment in a intended project, for example, Posco.

However, despite being less than committed, FDI inflows have risen rapidly, from \$24 billion in 2012 to \$44.2 billion in 2015 — a seven-year high. This increase is also fairly broad-based. It is not just the e-commerce

(trading) sector that has received more inflows; other sectors such as computer software and hardware, construction, services, autos and the telecom sectors also account for a large share of the increase.

Interestingly, even though China continues to attract larger FDI inflows than India in absolute terms, India has started to close the gap, when FDI is measured as a share of GDP. FDI inflows into China have moderated to 2.3 per cent of GDP in 2015, from 2.6 per cent in 2014. During the same period, FDI inflows into India rose to 2.1 per cent from 1.7 per cent.

Additionally, one could also argue that the quality of FDI inflow into India is much better. Over the last decade or more, China has accumulated a large stock of FDI. As a result, almost half of the FDI inflow into China includes retained earnings. In contrast, almost three-quarters of FDI inflows into India are fresh equity infusions.

The FDI received by India in 2016 are much higher than other countries and presently highest in the world. According to Department of Industrial Policy and Promotion (DIPP), the total FDI investments India received during April - September 2016 rose 30 per cent year-on-year to US\$ 21.6 billion, indicating that government's effort to improve ease of doing business and relaxation in FDI norms is yielding results.

The current Make in India and other initiatives are addressing the issues, which turns away investors from India.

6. *Comment on the challenges for inclusive growth which include careless and useless manpower in the Indian context. Suggest measures to be taken for facing these challenges.*

Hints:

The inclusive growth challenge in front of India is very huge, given the fact that a lot of labour in India is unskilled and malnourished, i.e. less cared for and similarly, many of them have never entered labour force because of disguised unemployment.

To take care of the cared less segments of the Indian society and use the used less manpower in terms of inclusive growth is a challenge for NITI Aayog as we have lot of less cared and used manpower.

One of the best ways growth can be made more inclusive is to ensure that it creates a sufficient number of new employment opportunities to satisfy the aspirations of the new entrants into the labour force, and also absorb some of the labour which should move out of agriculture.

This can be done in many non-agricultural sectors such as transport, tourism health, education etc. but the experience of other emerging market countries is that a large part of the new employment must be created in manufacturing.

Manufacturing in India has underperformed in this respect because it has not grown as rapidly as it should have and has been much less labour intensive than might have been hoped.

Another area of policy that is relevant for both the growth of the manufacturing sector and for its employment generation potential is the reform of labour laws. India's labour laws are generally regarded as more complex than those of most other countries and also less flexible. Employers do not have the flexibility to reduce the size of the permanent work force, or to close down an industrial unit, when faced with a decline in demand, except with the permission of the relevant government, which is almost never granted in practice. This discourages investors from labour intensive areas of production.

Employers also try to get around the law by hiring a large proportion of their labour force in the form of contract workers, who are kept on the rolls only temporarily, and rotated out before the time period when any worker has to be given permanent status. Restrictive labour laws are often cited as one of the factors that prevented Indian entrepreneurs from reaping the full benefit of the abolition of the Multi Fibre Agreement, which eliminated quota restrictions on imports of textiles and garments into the industrialized world.

The necessary and most important measures are:

- A national level labour reform code, based on the revised Rajasthan state labour law
- Exit Policy
- Bankruptcy Code
- Very strong focus on Human Resource Development by investment in education and health
- Skill development of labour

7. *What is water-use efficiency? Describe the role of micro-irrigation in increasing the water-use efficiency.*

Hints:

Main Idea and concept of the question:

- Despite India's rapid development and urbanization, industrial and domestic water users in India consume 10 percent and 8 percent respectively, while the agricultural sector consumes 82 percent of total supply.
- With limited water supply and the continuing importance of agriculture, illustrates the critical need for improved Water use efficiency in India.
- The answer can be explained by defining water efficiency and explaining the role of micro irrigation in increasing water use efficiency.

Introduction:

- In a purely hydrological context **Water use efficiency has been defined as the ratio of the volume of water used productively.**
- Water use efficiency (WUE) is the measure of a cropping system's capacity to convert water into plant biomass or grain. It includes both the use of water stored in the soil and rainfall during the growing season.

Role of micro-irrigation in increasing water use efficiency:

- Micro-irrigation (MI) is proved to be an efficient method in saving water and increasing water use efficiency as compared to the conventional surface method of irrigation, where water use efficiency is only about 35-40 percent.
- **The on-farm irrigation efficiency of properly designed and managed drip irrigation system is estimated to be about 90 percent.**
- **Productivity gain** due to use of micro-irrigation is estimated to be in the range of 20 to 90 percent for different crops.
- The reduction in water consumption in micro-irrigation also **reduces the energy use (electricity) that is required to lift water from irrigation wells.**
- Farmers using a pumping systems to irrigate their fields should ensure that the pump and pipe size are fitting with their needs, thus avoiding water and energy overuse and consequent leakages.
- Emerging computerized **GPS-based precision irrigation technologies for self-propelled sprinklers and micro-irrigation systems** will enable growers to apply water and agrochemicals more precisely and site specifically to match soil and plant status and needs as provided by wireless sensor networks
- **Recent research in Spain** shows that the alternative subsurface drip irrigation system (SDI) has improved the irrigation water use efficiency in comparison with a traditional Drip irrigation system.
 - The SDI system provided relevant yield increases for the same irrigation water use. This could be a recommendable option to save water in areas where water resources are particularly scarce without compromising the crop yield.
- Based on water use efficiency values, it is recommended that potato should be cultivated using furrow and drip irrigation to **achieve the optimum quantity and quality of tuber yield and water use efficiency.**
- Drip irrigation systems are often used in arid or semi-arid environments to improve WUE, and are **valuable production tools in areas where water is limiting.**
 - This irrigation method has several advantages over furrow systems, including reduced water use,
 - The increased water efficiency in drip irrigation systems is generally related to reduced soil percolation and surface evaporation as compared to other irrigation systems.

8. What is allelopathy? Discuss its role in major cropping systems of irrigated agriculture.

Hints:

Allelopathy:

- Allelopathy is a phenomenon where one species inhibits the growth of another. Through the release of bio-chemicals termed as allelochemicals, certain species can greatly influence the germination, growth, survival, and reproduction of other organisms.
- Allelopathy is a sub-discipline of chemical ecology that is concerned with the effects of chemicals produced by plants or microorganisms on the growth, development and distribution of other plants and microorganisms in natural communities or agricultural systems.
- The allelochemicals can have beneficial (positive allelopathy) or detrimental (negative allelopathy) effects on the target organisms and the community.

Role of Allelopathy in major cropping systems of irrigated agriculture:

- Allelopathy is strongly coupled with other stresses of the crop environment, including insects and disease, temperature extremes, nutrient and moisture variables, radiation, and herbicides.
 - These stress conditions often enhance allelochemical production, thus increasing the potential for allelopathic interference. In the paradigm of interactions, **the data indicate that crops are more sensitive to allelopathy when moisture, temperature, or nutrient conditions are less than optimal.**
- Allelopathy stress interactions also have **implications for herbicide and residue management** strategies, crop rotations, biological control measures, and tillage practices that can contribute to a more sustainable agriculture.
 - Allelopathic interactions between plants and other organisms may become an alternative to herbicides, insecticides and nematicide for weed, disease and insect control.
- Allelochemicals can **stimulate or inhibit plant germination and growth, and permit the development of crops with low phytotoxic residue amounts in water and soil**, thus facilitating wastewater treatment and recycling
- Crop allelopathy can be effectively used to **control weeds in the field**, to alleviate allelopathic auto-toxicity and reduce inhibitory influence among allelopathic crops to improve the utilization rate of land and to increase the annual output of the soil by establishing reasonable crop rotation and intercropping systems.
 - For instance, there was relative abundance and population suppression of plant parasitic nematodes under *C. odorata* fallow. Experts suggested that the use of bush fallow with *C. odorata* might become an integrated management practice in the management of nematode pests in crop production in south-western Nigeria.
- **Intercropping** of sorghum, sesame and soybean in a cotton field produced greater net benefits and a significant inhibition over purple nutsedge in comparison with a cotton alone field.
- Allelopathic applications, such as **straw mulching, provide sustainable weed management** further reducing the negative impact of agriculture on environment.
 - The allelochemicals from decomposed straw can suppress weed growth in farmlands, and reduce the incidence of pests and diseases. Moreover, straw mulch can improve the soil organic matter content and improve soil fertility.
- The structure of allelochemicals can be used as an analogue for the synthesis of new pesticides. These **biopesticides** will perhaps be far less harmful for the environment as compared to synthetic agrochemicals.
- Allelopathy is a novel approach offering multiple solutions to conundrum of decreasing food availability under rising global population. With vast application in weed management, it can replace hazardous chemical and mechanical approaches being used in crop production.
- Development of crop cultivars with more allelopathic potential may help in better resistance to biotic and abiotic stresses.

- Research efforts should be focused on screening more allelopathic plants, to search potential cultivars producing more allelochemicals and to identify promotory allelochemicals in plant water extracts.
- It would be a luminous direction to proceed in order to achieve agricultural sustainability, environmental safety, food security, resource conservation and economic stability.
- By understanding and applying allelopathy we can sustainably maximize crop yields while minimizing disruptive and costly chemical input.

Concerns:

- When grown in rotation with tobacco the stand establishment and growth of maize were improved compared to mung bean. **Mungbean stand establishment and growth were suppressed.** Therefore, the allelopathic nature of crops must be considered in crop rotation, intercropping and stalk mulching.
 - Although there are several promising rice allelochemicals reported to inhibit weed growth and some pathogenic organisms, **their direct use as pesticides is not successful due to several reasons**, viz. their stability under natural environment, selectivity and limited activity, effect on non-target organisms.
 - **Many important crops, such as rice, sugarcane, and Mungbean, are affected by their own toxic exudates or by phytotoxins produced when their residues decompose in the soil.**
 - For example, in Taiwan the yield of the second annual rice crop is typically 25% lower than that of the first, due to phytotoxins produced during the fallowing period between crops.
9. *Discuss the role of land reforms in agriculture development. Identify the factors that were responsible for the success of land reforms in India.*

Hints:

The important land reforms introduced after independence in our country are:

1. Abolition of zamindari system;
2. Accepting the fundamental principle that lands belonged to those who do the tilling;
3. Enacting Land Ceiling Act;
4. Encouraging Bhoodan and Sarvodaya movements; and
5. Devising suitable rational basis for obtaining land revenue. The proposal 'land belonging to the tiller' was meant to redistribute rural income to the advantage of those who work in the fields and to the disadvantage of those who do not.

Another effect of this proposal was that control of a very considerable amount of land was to pass from rent-receivers to tenants, crop-shares and labourers. Major reasons for success (very limited) of land reforms and its role in agricultural development were:

1. It abolished exploitative land tenure systems started by the British under Permanent Settlement System
2. Land transfers across the world have always happened with force; major merit of Indian case was that it was largely non-violent.
3. In many cases, tenants were also given ownership.
4. rents were fixed in the range of 25-33%
5. Even though these land reforms were met with limited success, they made a significant positive impact on poverty removal.
6. In areas where land reform has not been implemented, the inequalities have persisted; caste oppression is most acute and has generally experienced low socio-economic development.
7. Brought fundamental changes in the agrarian economy, rural social structure, and rural power structure. Moved India society towards the egalitarian society.
8. Increased democratization of Indian polity and reduction in influence of the dominant sections of the society.

To sum up, Land reforms are major instruments of social transformation in a backward economy based on feudal and semi-feudal productive relationships. But in India, they met with limited success mainly because of the political and bureaucratic apathy.

10. Give the vulnerability of Indian agriculture to vagaries of nature, discuss the need for crop insurance and bring out the salient features of the Pradhan Mantri Fasal Bima Yojana (PMGBY).

Hints:

All over the world, agriculture is synonymous with uncertainty and risks. On an estimate, the agriculture sector contributes around 24 percent to the GDP and any change in the same can have multiple effects on the economy. The agricultural growth and the economic growth are inevitably linked with each other. Nowadays, the Indian government has also been showing great concern about the risks and uncertainty related to agriculture. We are all aware of the avoidable deaths of farmers in Maharashtra and many other states of India. These farmers got caught in a debt trap that had a disturbing effect on them and their family.

A crop insurance plan assists in the stabilization of crop production and related income of the farmers. It assists in the best allocation of resources in the production procedure. It becomes more of a necessity considering the current scenario of farmers and agricultural-related issues. It is a need or necessity and many other things. This article will help you understand about crop insurance, what it covers, benefits etc.

Benefits of Crop Insurance in India

Yield Protection: This plan provides required coverage to farmers against a production loss for crops. It also offers preventive planting and replant security.

Revenue Protection: It is one of the most common plans. It acts like a tool that allows farmers to manage their yield and price risks.

Revenue Projection with Harvest Price Exclusion: This is basically the same as a Revenue Protection policy, except that the cost of insurance is based upon the anticipated price only.

Group Risk Protection and Group Risk Income Protection: It protects the farmers and crops from any disastrous loss.

Salient Features of PMFBY

Pradhan Mantri Fasal Bima Yojana is a new crop insurance scheme that was announced by the Government on 13th January 2016. It was rolled out from June 2016.

- This scheme will let farmers pay a very low premium to insure their crops. Farmers will have to pay a premium of only 2% of the sum insured for Kharif crops, 1.5% for Rabi crops and 5% for horticulture and cash crops. The difference between the premium paid by the farmers and the premium fixed by the insurance companies will be subsidised and there will be no cap on the maximum subsidy paid by the Government. The subsidy will be borne equally by central and the respective state Government.
- Currently, farmers pay around as high as 15% of the sum insured as premium under the existing National Agricultural Insurance scheme and the modified National Agricultural Insurance scheme. The new scheme will replace all these existing crop insurance schemes.
- Agriculture is the backbone of Indian economy. Though, it contributes to only around 16 % of India's GDP, it provides employment to around 60% of our population. Hence, the prosperity of the agriculture is linked to the prosperity of the economy. The growth of this sector is an essential prerequisite for inclusive growth as well as reduction of poverty in India.
- But, Indian agriculture suffers from myriad problems and one of them is excessive risk and uncertainty faced by the farmers. We lack proper irrigation facilities in India. 56 % of the total cropped area in India has no irrigation facilities at all. This makes agriculture highly dependent on monsoon. Two consecutive monsoon failures in 2014 and 2015 led to wide-scale crop failure. As per data, 207 districts in 9 states have been hit by drought. It led to farmer suicides due to inability to repay their debt. Market prices of crops like pulses increased due to this supply-shock.
- It is against this backdrop, that a crop insurance scheme to deal with risks associated with weather fluctuation is imperative for alleviating the distress caused to the farmers.

- At present, only 23% of cropped area in India has access to insurance. Pradhan Mantri Fasal Bima Yojana Scheme envisages covering 50% of the area.
- Apart from lowering premiums, there will be no capping on the sum insured by the farmers. This scheme promises to provide prompt and easy settlement of claims through the use of technology like GPS, smart phones, remote sensing and drones to access actual crop damage. The claim amount will be directly transferred to the bank accounts of the farmers.
- The scheme also provides for coverage of post-harvest losses and localised crop losses like hailstones.
- The other benefit of the scheme could be that banks will be willing to lend more to farmers as the risk of lending to them will reduce due to insurance.

All in all, though the scheme will impose burden on the exchequer, it is worth paying for the benefits of the farmers as well as the economy.

11. Give an account of the current status and the targets to be achieved pertaining to renewable energy source in the country. Discuss in brief the importance of National Programme on Light Emitting Diodes (LEDs).

Hints:

Main Idea and the concept of the question:

- Renewable energy has been the focus of India's energy goals especially after India set targets in the light of the Paris climate agreement.
- The question demands the current status and targets set by India with respect to renewable energy and the significance of LED programme launched by India.

Introduction:

- India's quest for green energy has crossed a major milestone, with renewable plants, mainly wind and solar, surpassing the capacity of large hydroelectricity projects, which were once the countries' biggest source of electricity and regarded as "temples of modern India".

Current status and targets related to renewable energy sources in the country:

- As of September 30, 2016 India's cumulative grid interactive or grid tied renewable energy capacity (excluding large hydro) reached about 44. 24 GW.
- 61% of the renewable power came from wind, while solar contributed nearly 19%, biomass power (10. 6%), small hydro (9. 4%)
- **Targets: in (MW) till 2022:**
 - wind power-60000
 - Solar power-100000
 - Small hydro-5000
 - Bio power- biomass+ waste to power-5000 MW
- Recently the government has set a Rs 6 lakh-crore target of building renewable energy plants. This includes 1lakh mw of solar power capacity by 2022, five times the earlier target of adding 20,000 mw.

Importance of National Programme on Light Emitting Diodes:

- In order to conserve energy and decrease energy consumption". **Unnat Jyoti by Affordable LEDs for All (UJALA)**" the National LED programme was launched in Bhopal, Madhya Pradesh. The scheme was initially labelled DELP (Domestic Efficient Lighting Program) and was relaunched as UJALA.
- The scheme is **being implemented by Energy Efficiency Services Limited (EESL), a joint venture of PSUs under the Union Ministry of Power.**
- It will be implemented across the country by 2019

- It aims to install LED bulbs for domestic and street-lighting in 100 cities across India
- The government plans to replace 77 crore incandescent bulbs and 3.5 crore street with energy efficient LED bulbs
- UJALA scheme aims to promote efficient use of energy at the residential level; enhance the awareness of consumers about the efficacy of using energy efficient appliances and aggregating demand to reduce the high initial costs thus facilitating higher uptake of LED lights by residential users.
- UJALA is a flagship project of the Government of India where it wants every home in India to use LED bulbs so that the **net power or energy consumption rate comes down and the carbon emission rates can also be checked**
 - In the era of climate change Lesser consumption of power also means lesser emission of CO₂, and thus **reduced carbon footprints**.
 - This programme will help in mitigating the climate change by reducing the CO₂ emission by 85 million tonnes annually
 - National LED programme will also facilitate India's commitment towards reducing its emission intensity per unit of GDP by 33-35 per cent by 2030 under its Intended Nationally Determined Contribution (INDC).
- UJALA will **not only help reduce consumers their electricity bills** but also contribute to the energy security of India.
- It is an effort by the government to spread the message of **energy efficiency**
- AS LED bulbs have a long life and therefore they provide **both cost and energy savings** in the medium to long term.
 - As per the Economic Survey 2015-16, this change will see a savings of Rs 45,500 crore by reducing 21,500 MW electricity demand
- At present LED bulbs are only assembled in India. The chips and other essential parts are imported from other nations. The Government of India, consistent with the make in India campaign, plans to **encourage the manufacture of LED light fixtures in India**.

12. *Discuss India's achievements in the field of Space Science and Technology. How the application of this technology has helped India in its socio-economic development?*

Hints:

Main Idea and the concept of the question:

- Space science and technology under the supreme guidance of ISRO has heralded India into the world map.
- The question expects the India's achievements in this particular field and how far this technology has been beneficial to the development of the country and impacted the common man.

India's achievements in the field of Space Science and Technology:

Aryabhata, 1975:

Indian National Satellite system, 1983:

PSLV: India produced one of the most reliable launch vehicles in the form of PSLV. With the successful launch of the PSLV C28, the heaviest commercial mission undertaken by the Indian space agency, added to its credibility.

Chandrayaan

Mangalyaan

GSLV MK3: With GSLV MK3, by 2020 India will be in a special group of space cruising nations capable of taking humans to space.

Reusable Launch Vehicle, 2016: Recently, India successfully tested the Reusable Launch Vehicle Technology Demonstrator (RLV-TD) that was built for Rs 95 crore.

NAVIC:

- IRNSS is an ingeniously built constellation of seven satellites which has been now given an operational name of NAVIC (Navigation with Indian Constellation).
- The satellites can provide accurate real-time positioning and timing services and extend its service to regions 1500 km around India.
- will provide services in marine navigation, disaster management, vehicle tracking and fleet management, and navigation aide for drivers
- will reduce the country's dependency on US Global Positioning System (GPS).

India achieved a milestone in its space exploration programme recently when it successfully launched multiple satellites from one rocket into two different orbits.

How does Space technology help India's socio economic development:

General Applications:

- Space technology can be used to monitor crops, provide precise location, linking remote areas, map water courses to determine water storage locations, develop risk maps for areas prone to floods or droughts etc.

INSAT:

- The Indian national satellite (INSAT) system, commissioned in 1983, is a multipurpose satellite communications system used for a range of functions including television broadcasting and meteorological imaging.
- It plays a vital role in delivering cyclone warnings and is used in search and rescue operations.
- Growing applications like DTH, Satellite News Gathering, VSATs, Internet services etc.
- Use of INSAT for e-governance and developmental communication applications is also fast expanding.

TELEMEDICINE:

- The satellites are also used for "telemedicine", connecting speciality hospitals in India's major cities to hundreds of hospitals in rural and remote areas of the country,

REMOTE SENSING:

- The data is used for several applications covering agriculture, water resources, urban development, mineral prospecting, Environment, Forestry, drought and flood forecasting, Ocean resources , Infrastructure development, Rural development, and forecasting of potential fishing zones and disaster management.

Culture:

- Inventory and site management plans for 4000 heritage enabling ease of business

Earth science:

- Space derived inputs for operational weather forecast, tropical cyclone tracking & Ocean State forecast
- Potential Fishing Zone Advisory.

GPS:

- Productivity enhancements and quality of life improvements from the above, such as: Efficient tracking and positioning using GPS.

Economic benefit:

- The Mangalyaan mission made India gain spotlight in the international arena as it was the cheapest Mars mission ever made.

Weather:

- ISRO has designed and developed indigenous systems for ground based observations of weather parameters. It includes:
 - Automatic Weather Station (AWS) to providing hourly information on critical weather parameters such as pressure, temperature, humidity, rainfall, wind and radiation from remote and inaccessible areas
 - Agro Metrological (AGROMET) Towers to measure soil temperature, soil moisture, soil heat and net radiation, wind speed, wind direction, pressure and humidity
 - Flux Tower for multi-level micrometeorological observation as well as subsurface observations on soil temperature and moisture over the vegetative surfaces
 - Doppler Weather Radar (DWR) to monitor severe weather events such as cyclone and heavy rainfall.

13. *Why is nanotechnology one of the key technologies of the 21st century? Describe the salient features of Indian Government's Mission on Nanoscience and Technology and the scope of its application in the development process of the country.*

Hints:

Main Idea and the concept of the question:

- Along with Genetics, Biotechnology Nano technology is considered as one of the key technologies of the 21st century.
- The question demands the reasons why this technology is considered as a key technology of this century. Explain the salient features of the Nano mission and how far the applications of this technology help the development process of India.

Introduction:

- Nanotechnology primarily refers to the use and/or creation of particles that are smaller than 100 nanometres in at least one dimension.
- A consequence of the small size is that particles and structures created this way exhibit new physical property because they often have a new surface-to-mass ratio.
- The result is, that one can sometimes significantly alter a product's properties by using nanoparticles while keeping the same overall chemical composition unchanged.

Reasons why Nano technology is one of the key technologies of the 21 St century:

- **Because nanotechnology can be applied in many different areas.**
 - In recent years, the use of nanotechnology in the general economy has become increasingly common. This way, nanotechnology is slowly developing from a pure science to a real and tangible improvement in all applicable areas; and these are very diverse.
- **Also many other branches of science and technology have now reached their limits.**

Mission on nanoscience and technology:

- The Government of India launched a Mission on Nano Science and Technology (Nano Mission) in May 2007.
- The government sanctioned a sum of Rs. 1000 crore for a period of five years for the mission.
- Recognizing the success of Nano Mission, the Union Cabinet accorded approval for continuation of the Nano Mission in its Phase-II during the 12th Plan period with an allocation of Rs. 650 crore.
- The Department of Science and Technology is the nodal agency for implementing the Nano Mission
- **Salient features and thrust areas of the mission are:**

- capacity-building in research in nanoscience and technology
- training and creation of a large skilled manpower base
- development of products and processes for national development especially in the fields such as materials development, drug delivery and safe drinking water, etc
- establishment of linkages between industry and research and educational institutions and promoting public private partnerships (PPPs)
- promoting foreign collaboration in nanotechnology programmes.
- The 12th Plan aims to take this initiative forward with the lofty ambition of making India a “global knowledge hub” in nanotechnology. To this end, **a dedicated institute of Nano science and technology is being set up, and post-graduation programmes (M Sc and M Tech) in 16 universities and institutions across the country will be launched.**
- Besides, the mission is funding about 235 individual scientist-centric research projects on fundamental research in Nano-systems.
- To encourage industries to take up projects in Nano technology, **the Nano Mission launched by the Government of India plans to provide loans to start-up firms up to Rs. 10 crore**

Scope:

- Huge scope in the upcoming generations. It is the third highest booming field when compared with IT and Internet.

Applications:

- Nanotechnology can be applied to every item humans use in day-to-day life to make it more user friendly and intelligent.
- Centres of Excellence for Nanoscience and Technology set up by the DST help students and scientists to test their materials for minimal price

Agriculture:

- When inputs such as water, fertiliser and pesticides are delivered in nanoscale at appropriate spots in the soil or plants, they yield far better results than those obtained from their normal bulk application.
- slow release and efficient delivery of water, plant nutrients, pesticides and livestock drugs; monitoring of soil and plant health through nano-sensors; detection of pests; and removal of soil and water contaminants with nano-magnets.

Medicine:

- The same is true for the use of nano drugs on farm animals or human beings since the active ingredients of these drugs strike precisely at targeted pathogens.
- These instruments will be used to identify and kill cancer cells, deliver oxygen in diseased tissues, create artificial RBCs and map DNA structure and repair them in case of genetic disorder.
- ‘Nanodrug’ and ‘Nanocoat’ are two recently developed nanotech proprietary drug delivery technologies which can produce improved pharmaceuticals with high yield.
- A new nanotechnology-based drug delivery system, Nanoxel, has been made available in India for the anti-cancer drug paclitaxel. Introduced by Dabur Pharma Ltd. , the new system marks the first time that a nanotechnology based pharmaceutical product is being commercialised outside of the USA.

Computing:

- Nanoscale computing is all set to usher in tremendous changes in personal and industrial data storage.

Military applications could include nano-sized sensors to speed the detection of chemical and biological weapons

Others:

- Nanoparticles of titanium dioxide have been added to some suntan lotions and cosmetics. These tiny particles are transparent on the skin and can absorb and reflect ultra-violet rays.
- Nano-membranes have been produced that are portable and easily- cleaned systems that purify, detoxify and desalinate water meaning that third-world countries could get clean water.

Concerns:

- **Biosafety has to be the watchword in nanotechnology** research and its application. If mishandled, nano products and processes may pose health and environmental risks.
 - **Time taken for a nano-product to enter into the market is significantly higher** which in turn deters the funding agencies
 - **Facilities required for research are expensive** and become quickly out-dated due to technological advances
 - **Lack of proper policy** that governs the technology transfer from universities to industry
 - **Environmental effects** of nanomaterials are not receiving due attention
 - **Insufficient attention to toxicological studies of nanomaterials.**
14. *Rehabilitation of human settlements is one of the important environmental impacts which always attracts controversy while planning major projects. Discuss the measures suggest for mitigation of this impact while proposing major development projects.*

Hints:

The magnitude of challenge that major projects poses a rehabilitation challenge for thousands and lakhs people displaced.

The Tehri Dam, Sardar Sarovar Dam and related Rehabilitation issue were a classical case of development that did not materialize, but it snatched away the livelihood of hundreds of villagers and faced displacement.

- Tehri still faces the problem of land-slides; villages on the slopes are threatened by increasing landslides. Geologist suggests that the nature of land slip is a direct result of changed hydrology.
- In case of POSCO, by the time of Government completed the land acquisition POSCO scaled down its land requirement. The project did not take-off, the damage had already been done because during land acquisition, thousands of trees were cut down which earlier acted as a barrier against sea erosion and high Tides.
- SEZs projects had also been part of controversy where land meant for industrial development was used for other purposes. The most known conflicts relate to the chemical industry based Nandigram SEZ in WB and Paradip SEZ in Odisha for POSCO.
- In many cases, in urban as well as rural areas due to Infrastructural project many slums and unorganised colonies evacuated without proper rehabilitation.

In all above observation, one of the main grievances against the Government /agency is the failure to provide planed provision for proper rehabilitation/ in a proper way and promise of fair compensation before the evacuation drive carried out. The evacuation without proper rehabilitation is a violation of Article 21 of the Constitution.

Suggested Measures

- Set up a mechanism to understand local ecology, society and culture.
- Conservation and rehabilitation of historical and cultural heritage
- Promote the integration of land use, communication, and transport planning in way that reduce the demand for transport
- Focus on integrated coastal zone management programme to ensure proper development and coastal conservation
- Empower local authorities which can contract, operate and maintain economic, social and environmental infrastructure.

15. *The frequency of urban floods due to high intensity rainfall is increasing over the years. Discussing the reasons for urban floods, highlight the mechanisms for preparedness to reduce the risk during such events.*

Hints:

- There are two types of climatic events related to rains, high intensity rainfall and drought. Both are increasing and we are experiencing, both these events simultaneously. High intensity rainfall has increased in last 20-30 years. Monsoon pattern has changed in northern region with increasing possibility of floods in September, but increasing water scarcity in April.
- Due to climate change frequency of heavy rainfall events are decreasing in major part of central India, east and north India while increasing in peninsular India that is the region extreme rainfall and flood risk increasing significantly in Urban cities except some part of central India.
- The tropical monsoon zone is having spatial variation in rainfall and its frequencies. CC factors like rainfall availability, snowmelt or glacier retreat in river catchment and evapotranspiration.
- The northeast Monsoon (winter) caused by retreating monsoon winds that attain moisture from Bay of Bengal on the way back south from the northeastern direction, would be stronger. These winds are responsible for the rains in southern States of AP, TN, Kerala and parts of Karnataka. The IMD forecast did little to prepare the states for situation.
- Chennai and its neighbouring areas have witness unplanned urbanization in recent years that has destroyed the city's natural flood sink such marshland and river channels. Storm water drains are either clogged or just don't exist.
- Same in case of J&K floods are not because of only unusually rainfall, but due to destroyed drainage. Following pattern in Delhi, Bengaluru City municipality is mindless about drainage. Most of the lake, ponds have been eaten away by real estate.

Mechanism for preparedness to reduce the risk

- First and most important is to upgrade the drainage system in urban areas
- The outreach of public healthcare centers in urban area is limited, which hinders rehabilitation work in such case is to minimize mitigation public healthcare should be revamped for fast response.
- Need more investment for logistical support in latest equipment for disaster management team
- Efforts to decarbonize electricity production, Focus on clean energy
- policies to promote public transport, promote walking and cycling, reduce private cars that will increase air quality
- Abandoning the use of biomass fuel or coal to reduce emission.

16. *With reference to National Disaster Management Authority (NDMA) guidelines, discuss the measures to be adopted to mitigate the impact of the recent incidents of cloudbursts in many places of Uttarakhand.*

Hints:

The unusually heavy cloudbursts that stuck in many places in Uttarakhand, is an example of how extreme weather events can have severe consequences for our society and a new challenge to Disaster Management Agency.

NDMA guidelines are:

The hilly regions of India are susceptible to landslides, avalanches and cloudbursts from Himalayan Mountain followed by North-Eastern hills; the very reason is unplanned and unscientific development activity, deforestation, urbanization and increasing population.

India is identified as one of the six major disaster prone countries in the world, about 2 percent of GDP losses, because of natural disaster. 27 out of 35 states and UT are prone to such hazard. Among all the disaster, River Floods are the most extensive and devastating. From the overall pattern of incidence of hazard and its impact across the country, it can be noted that 95 per cent of the people are affected due to

hydro-meteorological events such as FLOODS and TOO LESS WATER CC increases the frequency and intensity.

MEASURE

A paradigm shift in 'NDMA' approach is focus on community based disaster management (CBMD), as a part of globally prevalent trend.

Use Community's ability to cooperate and organize, their knowledge, their means and resources that is critical in the immediate aftermath.

Under UN Convention "Hyogo Framework for Action"; focus on 5 priorities (1) formulating national policy, (2) building capabilities at local level, (3) Across the country increasing awareness, (4) putting communities at the centre of disaster risk and (5) Management

Special attention to vulnerable groups to person to disability, Pregnant women, Women , old person and children and emphasize on training, simulation and mock drills and stakeholders participation including NGOs, GRAM SABHA, URBAN BODY.

Financial devolution keeping in mind (PRIs) through a tiered structure from the district downward to Gram Sabha and same in Urban self-Government

It also recognizes the animal care at the time of disaster.

SUGGESTIONS

- Research and Strengthen early warning mechanism on cloud bursting
- Managing waste water over ground and control it through suitable stream, it may be natural and artificial (As Copenhagen experimented well)
- Light rescue helicopter should be incorporated for fast delivery of services.
- Food dropping system by helicopter need to make it more functional through design and innovation.
- while focusing on smart city need to align with holistic approach (Dharamshala as chosen for smart city)
- Houses shall be located and designed as per a disaster severity map.

17. The terms 'Hot Pursuit' and 'Surgical Strikes' are often used in connection with armed action against terrorist attacks. Discuss the strategic impact of such actions.

Hints:

A surgical strike is essentially a swift and targeted attack on specific target that aims to neutralize them while ensuring minimum collateral damage to the surrounding areas and civilians. Neutralization of targets with surgical strikes also prevents escalation to a full blown war. Similarly Hot pursuit is chasing the enemy even up to their own turf and it is an indicator of zero tolerance for terrorists.

Impact of such actions:

- India realizes that dropping the policy of 'strategic restraint' might ignite another spiral of violence in Kashmir. However, the following of the same has not worked either and perhaps there may be a breakthrough with new approach.
- The jihadist element will pressurize the other state to go for a similar strike. India had factored-in this move, and therefore villagers within 10 kms of punjab border were evacuated.
- It was not a strategic strike, but a tactical strike, where strike itself was not so important, but a break from previous approach was most important and thus, it made big news. Given that government successfully pulled it off, may encourage it to adopt a more offensive approach.

Sometimes too much peaceful nature is assumed to be a sign of weakness and thus, from time to time, India needs to shrug-off this issue and pose a credible threat for the terrorists, i. e. fear of repercussions. Thus, hot pursuit of northeast rebels was also necessary, as they thought that due to porous border they could always rush to other country, Government of India would not be able to do anything.

The success of Russia and Israel in preventing major terrorist attacks in recent past has been because of their offensive approach.

18. *"Terrorism is emerging as a competitive industry over the last few decades." Analyze the above statements.*

Hints:

Terrorism is the unlawful use of force or violence against person or Property to intimidate or coerce o government, the civilian population, or any segment thereof, in furtherance of political or social objectives.

There are many dimensions to terrorism, such as, soft Terrorism such as Cyber terrorism, Cultural terrorism, Intellectual terrorism etc. And as far as Hardcore or violent form of terrorism it is very much tangible to see the world around that how ideology of terrorism has not spared a single country on the Planet.

Terrorism is no longer a very isolated or concealed activity, particularly after the popularity of internet, there are virtual universities training people in hardcore doctrines and ideologies.

Similarly, there seems to be a competition among terrorists, as who would be most cruel or how far and how soon they can take responsibility of terrorist events globally.

Internet is utilized by terrorist groups for two purposes: propagation of ideas and communication. Communication is end to end encrypted now and there is no practical way for any intelligence agency to decrypt these communications in real time.

Organizations prefer for decentralized planning of terrorist attacks and the reason lies in the fact that if the planning is done from one centre or in centralized manner, they can be easily targeted by those against them. It is easier to open a franchise operation for them because it gives the attacker a sense of belongingness and identity that they are working on terrorist organization's behalf and serving its purpose.

Also there is a competition among the terrorists groups, as who can attract most recruits and attract most funding and donations (through Hawala channels). Thus, they work like an organization, with finite and fixed aims and a mechanism of working.

19. *Border management is a complex task due to difficult terrain and hostile relations with some countries. Elucidate the challenges and strategies for effective border management.*

Hints:

- The term border management must be interpreted in its widest sense and should imply co-ordination and concerted action by political leadership and administrative, diplomatic, security, intelligence, legal, regulatory and economic agencies of the country to secure our frontiers and sub serve the best interests of the country.
- Border management in India, which is responsibility of Border Security Force (BSF), is a very challenging task, given that the BSF has to guard so many different climatic conditions, varying from coasts, to hot deserts and Marshland and harsh cold in trans-Himalayas.
- India has 14, 880 kms of land border running through 92 districts in 17 States and a coastline of 5, 422 kms touching 12 States and Union Territories (UTs). India also has a total of 1, 197 islands accounting for 2, 094 kms of additional coastline.
- In fact, barring Madhya Pradesh, Chhattisgarh, Jharkhand, Delhi and Haryana, all other States in the country have one or more international borders or a coastline and can be regarded as frontline States from the point of view of border management.
- The dynamic nature of the problems concerning management of borders is brought out by the manner in which the sensitivity of India-Nepal border has changed over a period of time. This border, which has been an open one, was once peaceful and trouble-free. However, with the increasing activities of Pakistan's Inter-Services Intelligence (ISI) in Nepal, the nature of the border has changed completely.
- The concept of border security has undergone a sea change with the growing vulnerability of the coastline and also of the airspace. In response to the gradual expansion and strengthening of security so far, mainly along what has long been perceived as a sensitive land border, the transgressor is already on the look-out for soft gaps, either on the land or along the coast and if need be, from the air.
- Insurgent groups in different parts of the country are receiving foreign support and encouragement. Illegal infiltration and smuggling of arms and explosives, narcotics and counterfeit currency are pressing

problems. The porosity of our borders in many parts, makes the task of the anti-national forces much easier. All this underscores the need for utmost vigilance on the borders and strengthening the border guarding forces.

- Some of the main problems currently afflicting the management of our borders include maritime boundaries. Some of our maritime boundaries are still undefined and much of our land borders are not demarcated on the ground. The disputed and unsettled nature of our boundaries has made them a source of tension with their policing much more difficult.
 - Since many of our borders are man-made artificial boundaries and not based on natural features such as rivers and watersheds, they are extremely porous and easy to cross. Multiplicity of forces on the same borders has inevitably led to the lack of accountability as well as problems of command and control.
 - Border Guarding Forces need to be distinguished from central police organizations. Being more akin to the Army and different from central police organizations which are called in aid of civil power from time to time, they need to be appropriately strengthened both in terms of equipment and manpower.
 - The forces hostile to India have tended to occupy the vacuum created by inadequate reach of the national media. For combating terrorism and insurgency, quite often security forces are called upon to take tough measures.
 - These measures may sometime cause inconvenience and annoyance to the local people. This sense of discontent is exploited by hostile elements to create a feeling of ill will against the security forces and the Government.
 - Timely release of information to the media would help in combating such invidious propaganda of the elements hostile to India. Due to the sensitive nature of their duties, the interaction of the officials of the security agencies and security forces with the media has necessarily to remain restricted. However, specialized officers, properly equipped and trained may impart information to the media, particularly after the reporting blunder during 2008 Mumbai Attack.
20. *Use of Internet and social media by non-state actors for subversive activities is a major security concern. How have these been misused in the recent past? Suggest effective guidelines to curb the above threat.*

Hints:

The Internet provides non-state actors such as terrorists with access to audience worldwide, where users have immediate access to propaganda, information, and recent events. The issue arises when terrorist groups, supporters, and sympathizers use social media platforms such as, YouTube, Twitter, Instagram, Tumblr, and private messaging to conduct terrorist-related activities.

For instance, youth can become violently radicalized or recruited via the Internet and travel abroad to further the aims of extremist organizations, or returns home imbued with knowledge, skills, and experience, and recruits and encourage aspiring extremists to commit domestic attacks. Moreover, via the Internet these individuals can provide funding to terrorist organizations and radicalize others by disseminating propaganda.

The purpose of using the Internet for terrorist activities is two-fold – it can be used for communicative or instrumental activities. This includes: psychological warfare, data mining, publicity and propaganda, fundraising, recruitment and mobilization, networking, sharing information, and planning and coordinating attacks.

Social media sites connect like-minded individuals together, creates in-group identification, and increases there animosity towards specific issues. The rapidity with which media can be disseminated, coupled with its capacity for extremely targeted messaging and hash tags makes it an ideal place for violent extremists to operate.

However, online propaganda is not the sole agent of radicalization, let alone the means by which vulnerable individuals are radicalized. The Internet is a very powerful and effective accelerant that plays a role in the radicalization process, but does not necessarily increase the opportunities for self-radicalization. The Internet is not a substitute for in-person gatherings, but instead complements in-person communications.

To eradicate Internet and social media use by terrorists and its supporters there must be enhanced international cooperation, in conjunction with increased information sharing between domestic and foreign intelligence agencies, and local and national law enforcements. Furthermore, the information should be used used to

thwart suspected terrorist plots and identify radicalized individuals, along with pertinent information such as, where they live, who they associate with, and what terrorist activities they have conducted.

Law enforcement should continue working alongside social media corporations to shut down pro-ISIS accounts and posts. However, the problem lies in the global nature of social media and the reliance upon self-policing by users to identify objectionable content. For instance, Facebook has long been a place where users could expect to have content that did not fit the status quo to be removed. This includes profiles, pages, or groups that support terrorism extremist beliefs and messages. Twitter's terms of service also condemn the promotion of terrorism and will suspend accounts that engage in the threatening or promotion of terrorist acts. Although, Twitter continues to strongly support freedom of expression and diverse perspectives.

The challenge for sites like Facebook and Twitter goes beyond identifying terrorist accounts, but instead defining and determining what content "promotes terrorism", in addition to defining key terms such as "graphic content", and "malicious or violent extremist speech". These definitions should correspond to the government's legal language, ensuring the exact material law enforcement deem as "extremism" is removed.

Unfortunately, social media corporations do not explicitly define these terms, however content that is considered offensive or disturbing, or gets reported by other users as violating some law will be removed. These corporations must veer away from a blanket policy banning all material that is seen as inciting violence, as this could lead to questions of censorship and freedom of expression. The Internet and social media will continue to be used by terrorist groups, supporters, and sympathizers. It is crucial for the Government to acknowledge this issue and develop a means to successfully reduce and deter this activity, before radicals exclusively use the "dark net" to achieve their terrorist goals, thus, making it even more difficult to police and censor.