

GS SCORE



UPSC Mains 2017

Model Hints

GENERAL STUDIES

Paper - 3

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Model Hints

UPSC MAINS 2017

GS PAPER - 3

Time Allowed: 3 hr.

Max. Marks: 250

1. Among several factors for India's potential growth, saving rate is the most effective one. Do you agree? What are the other factors available for growth potential? **(Answer in 150 words)**
2. Account for the failure of manufacturing sector in achieving the goal of labour-intensive exports. Suggest measures for more labour-intensive rather than capital-intensive exports. **(Answer in 150 words)**
3. Examine the development of Airports in India through joint ventures under Public-Private Partnership (PPP) model. What are the challenges faced by the authorities in this regard? **(Answer in 150 words)**
4. Explain various types of revolutions, took place in Agriculture after independence in India. How these revolutions have helped in poverty alleviation and food security in India? **(Answer in 150 words)**
5. What are the reasons for poor acceptance of cost-effective small processing unit? How the food processing unit will be helpful to uplift the socio-economic status of poor farmers? **(Answer in 150 words)**
6. Stem cell therapy is gaining popularity in India to treat a wide variety of medical conditions including Leukaemia, Thalassaemia, damaged cornea and severe burns. Describe briefly what stem cell therapy is and what advantages it has over other treatments? **(Answer in 150 words)**
7. India has achieved remarkable successes in unmanned space missions including the Chandrayaan and Mars Orbiter Mission, but has not ventured into manned space missions. What are the main obstacles to launching a manned space mission, both in terms of technology and logistics? **(Answer in 150 words)**
8. Not many years ago, river linking was a concept but it is becoming a reality in the country. Discuss the advantages of river linking and its possible impact on the environment. **(Answer in 150 words)**
9. Discuss the potential threats of Cyber attack and the security framework to prevent it. **(Answer in 150 words)**
10. The North-East region of India has been infested with insurgency for a very long time. Analyze the major reasons for the survival of armed insurgency in this region. **(Answer in 150 words)**
11. One of the intended objectives of the Union Budget 2017-18 is to 'transform, energise and clean India'. Analyse the measures proposed in the Budget 2017-18 to achieve the objective. **(Answer in 250 words)**

12. "Industrial growth rate has lagged-behind in the overall growth of Gross-Domestic-Product (GDP) in the post-reform period." Give reasons. How far the recent changes in Industrial-Policy are capable of increasing the industrial growth rate? **(Answer in 250 words)**
13. What are the salient features of 'Inclusive growth'? Has India been experiencing such a growth process? Analyse and suggest measures for inclusive growth? **(Answer in 250 words)**
14. What are the major reasons for declining rice and wheat yield in the cropping system? How crop diversification is helpful to stabilize the yield of the crops in the system?**(Answer in 250 words)**
15. How do subsidies affect the cropping pattern, crop diversity and economy of farmers? What is the significance of crop insurance, minimum support price and food processing for small and marginal farmers? **(Answer in 250 words)**
16. Give an account of the growth and development of nuclear science and technology in India. What is the advantage of fast breeder reactor programme in India? **(Answer in 250 words)**
17. 'Climate change' is a global problem. How India will be affected by climate change? How Himalayan and coastal states of India will be affected by climate change? **(Answer in 250 words)**
18. On December 2004, tsunami brought havoc on fourteen countries including India. Discuss the factors responsible for occurrence of tsunami and its effects on life and economy. In the light of guidelines of NDMA (2010) describe the mechanisms for preparedness to reduce the risk during such events. **(Answer in 250 words)**
19. Mob violence is emerging as a serious law and order problem in India. By giving suitable example, analyze the causes and consequences of such violence. **(Answer in 250 words)**
20. The scourge of terrorism is a grave challenge to national security. What solutions do you suggest to curb this growing menace? What are the major sources of terrorist funding? **(Answer in 250 words)**



UPSC MAIN EXAMINATION

(GENERAL STUDIES PAPER - 3)

HINTS

1. *Among several factors for India's potential growth, saving rate is the most effective one. Do you agree? What are the other factors available for growth potential?*

Hints:

A savings rate that refers to the percentage of gross domestic product (GDP) savings by households in a country (Difference between income and consumption). It indicates the financial state and growth of the country, as household saving is the main source of government borrowing to fund public services.

Contemporary macro-economic framework revolved around growth models and growth a function of both savings as well as investments. Out of them Investment also largely is determined the level of savings themselves.

No country has ever grown without a high savings, with the exception of period of colonization, where economies like Britain, got funds through plundering their colonies. China during its spectacular 10% growth phase had savings level in excess of 40-45 percent. Similarly, India had its highest growth during 2001-2008, when savings rate was historically highest. This is not about a coincidence, but a direct causation as understood from harrod-domar model in economics.

Saving could be Financial saving (money put in banks, government securities, shares, bonds, pension funds, etc) but other than cash held. The other is Physical saving which could be assets such as real estate, gold and commodities. All Financial Saving are available for investment in Economy

OTHER FACTORS: The other important component of growth is Investment. Investment in macro-economic framework implies increase in capital stock, known as gross capital formation and after accounting for depreciation, as net capital formation. Growth can only be increased with capital formation and thus, the importance of investments in an economy. For e.g., A new MNC decides to set up a new plant leading to increased production, and increase in GDP, it will also lead to greater employment and increased income for the people.

Similarly, apart from stock of investment, any factor which affects the quality of investment is also considered a contributing factor to growth.

- Technical improvements through research
- Labour skill training and improvement
- Automation
- Better management techniques
- Better infrastructure and power supply
- Stable policy environment
- Political stability, etc.

2. *Account for the failure of manufacturing sector in achieving the goal of labour-intensive exports. Suggest measures for more labour-intensive rather than capital-intensive exports.*

Hints:

Indian manufacturing sector contributes close to 17% to GDP. By 2020 it is expected to be major manufacturing destination. Indian manufacturing sector had gone through a transition from the initial industrialization and license raj phase to liberalization and the current phase of global competitiveness.

However, India's share of global manufacturing stands at little over 2 percent. China has meanwhile over the years positioned itself as the workshop of the world, accounting for 22.4 percent of global manufacturing.

Reasons for low labour Intensive exports: India's growth success has been driven by service-producing industries that mostly employ relatively skilled labor. Even within the manufacturing sector, India tends to specialize in relatively skill- and capital-intensive activities. This is despite the fact that that India's true comparative advantage lies in unskilled labor-intensive activities.

- **Poor credit availability for MSME:** MSME are largely responsible for labour intensive exports, however, our credit structure is biased in favour of large corporates which are capital intensive, who not only get credit cheaply, but also very easily.
- Slow growth of industries, due to lack of labour reforms and exit policy, that mainly employ low-skilled workers has caused manufacturing as a share of GDP to remain constant at about 16-17% during the two decades of economic liberalization.
- Today, a large and growing share of international trade consists of intermediate and unfinished goods shipped from one country to another to combine manufacturing or services. India's import substitution policy regime created a bias in favor of capital- and skill-intensive manufacturing, and the reforms have not been comprehensive enough to remove this bias.
- In addition, trade is necessary for vertical FDI, and trade costs are high in India, because of inefficient infrastructure, burdensome regulatory environment, and poor trade facilitation. India's labor laws hobble labor-intensive manufacturing.

Measures to Shift to Labour intensive rather than Capital Intensive

- Improving physical infrastructure from transport systems to the power sector is essential.
- Improving access to finance for smaller enterprises.
- Making a firm's entry and exit easier.
- Enhancing the flexibility of labour regulations.

Low-cost manufacturing is important for India. If India has to raise its share of manufacturing in GDP to around 25%, industry will have to significantly step up its R&D expenditure. This must be addressed by the new industrial policy. The quantum of value addition has to be increased at all levels. Larger the value addition, greater the positive externalities.

3. *Examine the development of Airports in India through joint ventures under Public-Private Partnership (PPP) model. What are the challenges faced by the authorities in this regard?*

Hints:

PPP is defined as a Project based on a contract or concession agreement, between a government or statutory entity on the side and a private sector company on the other side, for delivering a service on payment of a user charge.

- The privatization of Indian airports was set in motion way back in 1999, when a greenfield airport was set up in Cochin under the PPP route. Followed by airports of Bangalore and Hyderabad in 2004.
- In 2006, the aviation ministry signed concession agreements with GMR and GVK for expansion and modernization of New Delhi and Mumbai international airports. Thereafter, the privatization process was grounded following global economic slowdown, opposition by AAI employees, etc.

- Even though the privatization route has **allowed development** of efficient world class airports in India and has fueled the growth of air traffic in India, not all are in favor of it. Especially employees of AAI, who fear losing their jobs when private developers take over.
- Due to global slump in the Aviation sector after the economic slowdown, less of private players were interested in the government bids, which even impacted the pace of our already running major projects of Delhi and Mumbai Airports.

Challenges faced by the authorities

- Increased charges at PPP airports have certainly been a contentious issue for airlines. On some domestic sectors for example approximately 17% of the average gross fare now consists of taxes and fees, of which 10-12% is related to airport charges.
 - Projects are stalled for several months due to a lack of preparedness with respect to the concession agreement and the revenue sharing and tariff structure framework.
 - A clear process has not been established for determining the appropriate level of capital expenditure in airports and for monitoring project costs to prevent the massive budget over-runs that have occurred in some cases and which have simply been recouped through higher charges that are borne by the airlines and passengers.
 - Despite the successes of the PPP airports there are certainly areas for improvement, particularly in terms of economic regulation, land monetization, management of project costs and at a broader level creating a more predictable operating environment on issues such as bilateral policy, airspace efficiency and airline viability.
4. *Explain various types of revolutions, took place in Agriculture after independence in India. How these revolutions have helped in poverty alleviation and food security in India?*

Hints:

India's agricultural sector is characterized by traditional, subsistence and livelihood, rain fed farming, food grain oriented, lacking diversification and commercialization. India's majority of economic issues are primarily of poverty and unemployment and both the problems and their resolution lie in the agricultural sector.

- In the nascent independent India, production could be increased by bringing in more and more land under cultivation without addressing productivity. However, today all available arable land is already under cultivation which means production can be increased only through increased productivity.
- With increasing population, increased incomes especially of the poor in the future would increase the demand for agricultural products manifold. Agricultural sector is considered as very vulnerable, because it is one sector where demand will only keep on increasing and supply will always be volatile with so many structural factors.

Revolutions after Independence

Realizing the importance of food grains way back in the sixties, the government ushered in Green Revolution pioneered by DR. M.S. Swaminathan, to improve the productivity of wheat and other cereals, through researched improved seeds known as HYV seeds.

- After attaining the self-sufficiency in wheat and rice, other attempts with other revolutions were centered around products and their relative importance such as
- White Revolution (milk and Milk products)
- Yellow Revolution (oil seeds)
- Blue Revolution (marine products)
- Golden Revolution (Honey)
- Silver Revolution (Eggs)
- Red Revolution (Meat and tomato)

Tackling Poverty alleviation and Food security

- Food security should be envisioned around a “basic nutrition basket of goods” aimed at getting rid of malnutrition and ensuring “nutrition security” of its population. Both in terms of ‘Hunger’ and ‘Malnutrition’, India ranks poorly.
 - Initially, there is a need to have a mechanism to identify the beneficiaries or the poor people. BPL cards are of conclusive proof to them being beneficiaries, but not a conclusive proof of being below poverty line.
 - The entire TPDS (Targeted Public Distribution System) operation of procurement, storage, movement, and its ultimate distribution to the poor should be computerized with a technology leveraged tracking mechanism throughout the country. ADHAAR network can help government for creating a data base of the entire population.
 - Food Security has to be seen in broader context covering hunger, malnutrition, absolute poverty, addressing inefficiencies in the delivery channel, stream lining identification of beneficiaries, all aimed at improving living conditions of the people and getting rid of absolute poverty from the country.
5. *What are the reasons for poor acceptance of cost-effective small processing unit? How the food processing unit will be helpful to uplift the socio-economic status of poor farmers?*

Hints:

Despite the agrarian strength of production in India, food processing industry is still in a nascent stage, but holds tremendous potential to grow, considering the wide ranging and large raw material base that the country offers, along with a consumer base of over a billion.

The Food processing industry in India has a very small share of 1.5% in the total GDP of the country and as part of total manufacturing accounts for 9%.

Reasons for poor acceptance of Small Processing Unit

- Small processing units generally face higher costs of procurement as unlike larger corporates, they can't go for large scale corporate farming.
- They also lack large scale well-equipped warehouses, increasing their wastage and cost structure further.
- They also suffer from inconsistency in quality because of poor procurement system and lack of control. Which makes it very difficult for customer to adopt such products.
- Most-importantly, they lack funds and large-scale market presence to develop a brand value and name. which again gives advantage to large players. Thus, India's food processing market is dominated by big players.

Development of the food processing units will aid in increasing the farmers income significantly in the following ways:

- providing employment, especially in rural areas;
- providing steady demand at consistent prices to farmers.
- stimulating rural development;
- assuring better market opportunities to the farmer through corporate farming;
- reducing population migration to urban areas;

Government Initiatives

- Realizing the importance of food processing and its potential in India, the government has set up a separate Ministry for Food Processing Industries.
- In a bid to achieve the vision of the proposed National **Food** Processing Policy which is to position India as a World Food Factory, the government has launched SAMPADA – (the Scheme for Agro-Marine Produce Processing and Development of Agro-Processing Clusters.) It will complete the on-going Mega Food Parks and take up more cold chain projects.

6. *Stem cell therapy is gaining popularity in India to treat a wide variety of medical conditions including Leukaemia, Thalassaemia, damaged cornea and severe burns. Describe briefly what stem cell therapy is and what advantages it has over other treatments?*

Hints:

Stem cells are undifferentiated biological cells that can differentiate into specialized cells and can divide to produce more stem cells.

The ability of Stem Cells to self renew offers significant potential for generation of tissues that can potentially replace diseased and damaged areas in the body, with minimal risk of rejection and side effects.

Stem cell treatments are a type of intervention strategy that introduces new adult stem cells into damaged tissue in order to treat disease or injury.

Sources of Stem cells are: Bone Marrow, Peripheral blood stem cells, Amniotic Fluid and Umbilical Cord Blood.

Advantages over other treatments are:

- a) Lower risk of infection during the immune compromised portion of the treatment.
- b) Speed up the length of time it takes for injuries or wounds to heal
- c) Reduce pain, even chronic joint pain, with less need for medications
- d) Increase functionality, range of motion, flexibility and sleep quality
- e) Reduce muscle compensations and risk for future injuries
- f) Decrease nerve damage
- g) Increase collagen
- h) Help generate new heart and blood vessel tissue
- i) Help heal skin wounds, prevent formation of scar tissue and reduce hair loss
- j) Return patients to their normal activities as quickly as possible

7. *India has achieved remarkable successes in unmanned space missions including the Chandrayaan and Mars Orbiter Mission, but has not ventured into manned space missions. What are the main obstacles to launching a manned space mission, both in terms of technology and logistics?*

Hints:

Human spaceflight is space travel with a crew or passengers aboard the spacecraft.

A manned spaceflight would require a much larger vehicle. This requirement exists because of the following factors:

- Greater energy requirement per pound of payload.
- Psychological need for a much larger crew habitat for the long voyage of over two years
- Physical need for more supplies and consumables for the long voyage
- Need for extensive shielding and protections against intense solar radiation events.
- Additional needs for redundant and repairable systems and repair tools.
- Large solar array and/or nuclear power reactor for on board electrical power

Thus, before Indian astronauts reach space, the country has to overcome seemingly challenging technological and costs hurdles. To begin with, ISRO has to build an effective launcher to lift a spacecraft to Low Earth Orbit (LEO). Geostationary Satellite Launch Vehicle (GSLV)'s successor GSLV-Mk 3 is capable of lifting a spacecraft weighing up to eight tonnes. However, GSLV, which has failed in four of its first seven flights, has to prove its reliability.

8. *Not many years ago, river linking was a concept but it is becoming a reality in the country. Discuss the advantages of river linking and its possible impact on the environment.*

Hints:

The River Linking Project (NRLP), envisages the transfer of water from water 'surplus' basins where there is flooding to water 'deficit' basins where there is drought/scarcity, through inter-basin water transfer projects. It links rivers by a network of reservoirs and canals that will allow for their water capacities to be shared and redistributed.

Advantages

- This is an engineered panacea that will reduce persistent floods in some parts and water shortages in other parts besides facilitating the generation of hydroelectricity for an increasingly power-hungry country.
- The river interlinking project claims to generate total power of 34,000 MW (34 GW). Out of this, 4,000 MW will come from the peninsular component while 30,000 MW from the Himalayan component.
- The addition of hydropower is expected to curb the drinking water woes of millions and supply water to industries in drought-prone and water-scarce cities in south and west India
- The project claims to provide additional irrigation to 35 million hectares (m ha) in the water-scarce western and peninsular regions, which includes 25 m ha through surface irrigation and 10 m ha through groundwater. This will further create employment, boost crop outputs and farm incomes and multiply benefits through backward (farm equipment and input supplies) and forward linkages (agro-processing industries). Along with this the project is expected to create several benefits for navigation and fisheries.

Environmental Impact

- Different water flows represent different ecological systems thus can lead to ecological imbalance. The full range of natural intra and inter annual variation in hydrologic regimes and associated characteristics of timing, duration, frequency, and rate of change, are critical in sustaining the full native biodiversity and integrity of aquatic ecosystems.
- When rivers flow through forested, cultivated, and settled lands, they carry with them large amounts of silt. This silt is deposited along the way, enhancing the productivity of the surrounding lands, and finally of the coastal waters. This is the basis of the rich agriculture of the plains of India, and of the rich fisheries off our coasts. The river also pushes out the sea, which would otherwise invade deep into the land, and erode the coast.
- In order to create canals and reservoirs, mass deforestation will take place. This will have impact on rains and in turn affect the whole cycle of life. The project envisages the building of many dams with some of them having high lifts upto 120 m. This will lead to a huge social and environmental cost.
- Due to interlinking of rivers, there will be decrease in the amount of fresh water entering seas and this will cause a serious threat to the marine life system and will be a major ecological disaster.

9. *Discuss the potential threats of Cyber attack and the security framework to prevent it.*

Hints:

As India shifts to a cashless economy, cyber threats are at a new high with the number of such incidents occurring in banking systems increasing in the last five years. India witnessed more than 27, 000 cyber security threat incidents in the first half of 2017.

Potential threats of cyber-attacks:

- Threats reported include phishing attacks, website intrusions and defacements or damages to data as well as ransomware attacks.
- The types of cyber security incidents such as phishing, scanning, website intrusions and defacements, virus code and denial of service attacks are likely to grow.
- There is an ever-growing threat to the economy, financial sector, key government departments and infrastructure set-up, which in turn leaves internal security at risk

- India remains vulnerable to digital intrusions such as cyber-espionage, cybercrime, digital disruption and Distributed Denial of Service (DoS).

Security framework:

- **Internal response:**

- The Government of India took the first formalized step towards cyber security in 2013 with **National Cyber Security Policy, 2013**
- CERT-In is an emergency response team set up under the Ministry of Electronics and Information Technology for dealing with a range of cyber-attacks. Apart from this, the Government of India has four Sectoral Computer Emergency Response Teams to address Cyber Security Threats in Power Systems: Transmission, Thermal, Hydro and Distribution.
- To combat cyber security violations and prevent their increase, Government of India's Computer Emergency Response Team (CERT-in) launched '**Cyber Swachhta Kendra**' a new desktop and mobile security solution for cyber security in India.
- Apart from this, Government has also developed apps, software, etc to make devices safe.

- **External collaboration:** The Indian government has entered into cyber security collaborations with countries such as the USA, European Union and Malaysia. The U.K. has agreed to assist in developing the proposed National Cyber Crime Coordination Centre in India.

Suggestions:

- There is need to work on recruiting more work force and building capacity with professionals having expertise, training and motivation needed to deal with cyber criminals,
- India's budgetary allocation towards cyber security was only about Rs 42.2 crore in 2012-13. This needs to increase.
- There is need to setting up high-end cyber labs that are capable of critically inspecting every IT component before these are deployed in critical infrastructure across industry sectors.

10. The North-East region of India has been infested with insurgency for a very long time. Analyze the major reasons for the survival of armed insurgency in this region.

Hints:

India's North-east region has been land of thousand mutinies. These mutinies have been taking place since pre-independence times. The insurgencies in north east are in-part a reflection of its social, cultural, ethnic and linguistic diversity, terrain, socio-economic development, politico-economic conditions, historical evolution and changes in the environment of the area. They have also been financed and supported by the various global factors too, which include the proximity to the golden triangle in south-east Asia and money, drugs and arms being supplied by narcotics traders in exchange of safe transit.

Major reasons:

Large scale migration has created a fear in the minds of people that they will be reduced to minority in their own states or regions. Migrants threaten their culture and traditions and also occupy already limited employment opportunities. Migration of Muslims has also imparted it a communal color. Example: The recent protests in Bodoland was compounded by the perception among the Bodos that illegal migration from Bangladesh is relegating them to a minority status in their own land.

- Lack of economic opportunities and governance deficit making it easier for people to feel alienated and left out and thus providing support for insurgency.
- Porous international borders and easy availability of arms.
- Difficult terrain and weak infrastructure facilitating insurgents involved in conflict.
- Ethnic conflicts between several tribes and language issues, for example, Naga vs Manipur conflict

Efforts made:

- The major positives for the government in 2015 with regard to insurgency in Northeast India include:
 - The significant signing of the 'Framework Agreement' with the Nationalist Socialist Council of Nagaland-Isak-Muivah (NSCN-IM) for an eventual resolution of the problem
 - Getting the jailed leader Anup Chetia of ULFA back to India from Bangladesh.
 - Efforts for peace with insurgent groups of the region have also been started

11. One of the intended objectives of the Union Budget 2017-18 is to 'transform, energise and clean India'. Analyse the measures proposed in the Budget 2017-18 to achieve the objective.

Hints:

To "Transform, Energise and Clean" India, the Budget has adopted a multipronged approach and has given attention to all sectors of the economy with adequate thrust on rural development, agriculture, infrastructure, skill development, manufacturing and employment generation.

This agenda of TEC India seeks to

- Transform the quality of governance and quality of life of people;
- Energize various sections of society, especially the youth and the vulnerable, and enable them to unleash their true potential; and
- Clean the country from the evils of corruption, black money and non-transparent political funding.

Measures proposed to achieve this objective are-

Traditional Sectors

- Agriculture credit allocation has been increased to Rs 10 lakh crore.
- To save the farmer from the natural calamities, target has been increased to cover 40 per cent of crop area under Pradhan Mantri Fasal Bima Yojana and corpus under Long Term Irrigation Fund has been increased to Rs 40, 000 crores.
- MGNREGA has got the highest ever allocation of Rs 48, 000 crores

Education and Youth-

- Launch of Swayam with over 300 online courses and allocation of Rs 4, 000 crore to train the youth for market-oriented skills under Sankalp are aimed at making India the skill capital of the world

Rural Development

- Mission Antyodaya proposes to pull out 1 crore people and 50000 Gram Panchayats out of poverty
- Target of 100%village electrification by January, 2018
- Increasing the pace of the constructions of rural roads- the lifeline of villages, to 133 km per day under Pradhan Mantri Gram Sadak Yojana

Clean India

- Piped water supply on priority basis to Open Defecation Free villages
- In a move to curb black money and cleanse the political system, a maximum limit of Rs 2000 per person has been set for receiving cash donations by political parties.
- Contributions above this limit can be made only in the form of cheques or digital payments or through electoral bonds.

Infrastructure

- Allocation of Rs 1.3 Lakh crores for railways again, is the highest ever allocation for the national carrier with passenger safety; cleanliness and development works being the focus areas

- With a view to energise the real estate sector, “Infrastructure” status has been granted to the housing sector
- Infrastructure has got the highest ever allocation of Rs 3.96 lakh crores.

Investment

- Abolishment of FIPB
- To promote the small entrepreneurs, rate of Corporate Income Tax has been reduced to 25 per cent for companies with turnover less than Rs 50 crore.

Digital Economy

- Allocation of Rs 10, 000 crore for Bharat Net, launch of AADHAAR Pay, setting of special task force to address the cyber security concerns reiterate the Government’s commitment to transform the country into a digital economy.

Taken together, the Budget 2017-18 reiterates the Government’s intentions to bring about greater transparency, reduce corruption and achieve faster economic growth and is a step further in this direction with something for everyone to smile.

12. *"Industrial growth rate has lagged-behind in the overall growth of Gross-Domestic-Product (GDP) in the post-reform period." Give reasons. How far the recent changes in Industrial-Policy are capable of increasing the industrial growth rate?*

Hints:

India’s GDP growth rate in post- 1991 era stands at around 7% while touching 10.26% once in 2010 while industrial growth has lagged behind a lot standing at around 3-4% only.

Challenges that have restricted industrial growth are:

- Inadequate infrastructure
- Restrictive labour laws: Though labour protection and security are required, the flipside is that it discourages employers from hiring workers on a regular basis.
- Slow technology adoption: Inefficient technologies led to low productivity and higher costs adding to the disadvantage of Indian products in international markets.
- Complicated business environment due to bureaucratic red-tape.
- Low productivity
- Challenges for trade
- Inadequate expenditure on R&D and Innovation

The recent changes in the industrial policy aim towards- Transform, Reform and Perform. Their ability to increase the industrial growth rate depend on the following parameters-

- Establishing global linkages- The long-term objective would be to establish complete value chains, within India or across countries, in select sunrise sectors like renewable energy, food processing, electronics, etc.
- This would depend on integration of MSME sector with the global world and infusing modern technology in them.
- Enhancing industrial competitiveness-by improving labour productivity, leveraging presence of a large public sector in core sectors and the forward and backward linkages created over the decades provides for captive source for investments and efficiency improvements.
- Creating a predictable taxation regime
- Enabling ecosystem for technology adoption and innovation by encouraging start-ups and thriving innovation ecosystem that provides appropriate support at the right stage of innovation

A comprehensive, actionable, outcome oriented industrial policy will enable Industry to deliver a larger role in the economy; to fulfil its role as the engine of growth and to shoulder the responsibility of adding more value and jobs.

13. *What are the salient features of 'Inclusive growth'? Has India been experiencing such a growth process? Analyse and suggest measures for inclusive growth?*

Hints:

Inclusive growth consists of ensuring that all marginalized and excluded groups are stakeholders in development processes.

Salient features of inclusive growth are-

- Participation– People are able to participate fully in economic life and have greater say over their future.
- Equity-More opportunities are available to enable upward mobility for more people. All segments of society, especially poor or socially disadvantaged groups, are able to take advantage of these opportunities.
- Growth– An economy is increasingly producing enough goods and services to enable broad gains in well-being and greater opportunity.
- Stability- Individuals, communities, businesses and governments have a sufficient degree of confidence in their future and an increased ability to predict the outcome of their economic decisions
- Sustainability– Economic and social wealth is sustained over time, thus maintaining inter-generational well-being.

Overall it focusses more on the disadvantaged and marginal section of society like women, SC, ST, disabled, youth, children etc.

India is witnessing a high economic growth post- LPG reforms but they have not transformed into inclusive development as such-

Women: An unfavourable child sex ratio, high school drop-out rates, lower asset ownership, falling workforce participation levels, high levels of anaemia during adolescence and increasing incidence of violent crimes are reflective of the discriminatory practices against them.

Children: The number of working children in the 5-14 years age group is estimated to be 4.3 million. A number of child crimes like sexual harassment, child trafficking and child marriages are prevalent

SC, ST and OBC: High incidence of poverty and illiteracy rates among SCs, STs and OBCs. While a larger share of resources has been allocated for the benefit of these communities, the actual utilisation of funds has been poor.

Disabled people

- They experience stigma and compromised dignity in their daily life.
- It has not received adequate attention from different Ministries and Departments.
- Problem of accessibility in public as well as private buildings and transportation.

Measures to achieve inclusive growth

- Improving the quality of education and increasing the access, affordability for marginalised section.
- Improving the healthcare facilities in rural as well as urban areas.
- Undertaking Legislative, Policy and Institutional Reforms for their upliftment.
- Strengthening the implementation of existing policies made by the government.
- Improving Access to Aids/Assistive technologies for PwDs
- Enhancing employability by skill development of SC, ST, women etc.

14. *What are the major reasons for declining rice and wheat yield in the cropping system? How crop diversification is helpful to stabilize the yield of the crops in the system?*

Hints:

Average yields for wheat and rice have been declining in North-west India particularly, due to unsustainable agricultural practices adopted by farmers in India. These include:

- Excessive use of groundwater leading to poor water use efficiency and depletion of groundwater.
- Multiple infestations of weed flora, insect pests and diseases.
- over-use of fertilizers,
- excessive flooding of farms during paddy cultivation which leads to salinity,
- lack of crop diversification leading to nutrient deficiency in soil.
- Poor farming methods, such as burning of stubble.

Apart from these, agricultural sector is one of the sensitive areas which is also influenced by the global warming and associated climate change. Because of this monsoon cycle is affected and temperatures have increased causing further disruptions in whether cycle, all this has affected the cultivation period and has also brought water-tables lower.

Crop diversification benefits:

Practice of growing more than one crop (or enterprise) in any year to increase financial and biological stability of the farm. Similarly, the practice of planting a succession of crops in the same field. Practice is used for the management of pests, plant nutrition, crop scheduling and so on. These are together known as crop-rotation and diversification.

While crop diversification is certainly an important component of the overall strategy for small farm development, other dimensions of diversification such as livestock, employment, and income are also equally important for ensuring the economic viability and survival of small farmers as socio-economic entity.

Crop diversification can help to stabilize the yields in the following manner:

- By restoring nutrients in the soil, for example, leguminous plants, like beans restore nitrogen in soil.
- Crop diversification can better tolerate the ups and downs in the market value of farm products and may ensure economic stability for farming families of the country.
- By rotating the water intensive crops with water-efficient crops in between, water tables can be allowed to replenish themselves.

Apart from this, under the aberrant weather situations, dependence on one or two major cereals (rice, wheat, etc.) is always risky. Hence, crop diversification through substitution of one crop or mixed cropping/inter-cropping may be a useful tool to mitigate problems associated with aberrant weather to some extent, especially in the arid and semi-arid drought-prone/dry land areas.

15. How do subsidies affect the cropping pattern, crop diversity and economy of farmers? What is the significance of crop insurance, minimum support price and food processing for small and marginal farmers?

Hints:

The preferred strategy to achieve fairness in allocation is subsidization of prices of goods or services. The subsidy can be universal, as is the case with public transport and fertilizers, or targeted, as in the case of PDS.

Apart from causing huge deficits, universal subsidies distort the incentives for producers and consumers. Targeted subsidies fail in targeting due to widespread leakages and gaps in identification of beneficiaries.

It also creates dual-price markets—government delivers goods and services at subsidized prices to certain citizens, whereas others purchase the same at its regular market price. This causes the distortion, which affects not only the prices, but also cropping patterns, crop diversity and farming system. For example, in recent years, India has decreased its farm diversity owing to high MSP of wheat, which is replacing the millets in Rajasthan and MP.

This has also necessitated the large scale buying by the government as there are no buyers at those high prices. The procurement of food grain by the government almost doubled as well. In effect, we are now buying close to double the quantity at roughly 2.5 times the price compared to 10 years ago, leading to problem of over-stocking and wastages and also food inflation, that it causes in private markets.

It is, however, only farmers large enough to sell a substantial portion of their produce, who benefit. The rural poor, who really deserve support, are only hurt as costs rise.

Similarly, the fertilizer subsidy has created a bias for urea and we have overuse of NPK nutrients, which is affecting productivity.

Crop insurance can provide a much-needed safety net for farmers against various types of risks they face from weather and pests and diseases. However, Small and marginal farmers constitute 85 per cent (12 crores) of the total farmers (14 crores) in the country. Yet, their share in the coverage did not exceed 13.32 per cent under the NAIS scheme.

Food processing can help small farmers by:

- providing employment, especially in rural areas; as they do not work through out the year in their farms, and since they have good understanding of the products, they are preferred employees in farm processing sectors and generally they contribute to each other.
- providing steady demand at consistent prices to farmers.
- stimulating rural development;
- assuring better market opportunities to the farmer through corporate farming;

16. Give an account of the growth and development of nuclear science and technology in India. What is the advantage of fast breeder reactor programme in India?

Hints:

With a view to optimally utilize limited uranium reserves and large thorium reserves in the country, the Department of Atomic Energy has adopted a three-stage nuclear power programme, based on a closed nuclear fuel cycle, for generation of nuclear power and for achieving long term energy security.

The three-stage nuclear power programme, which is to be implemented sequentially, aims to multiply the domestically available fissile resources through the use of natural Uranium in Pressurized Heavy Water Reactors (first stage), followed by use of Plutonium obtained from the spent fuel of Pressurized Heavy Water Reactors in Fast Breeder Reactors, in the second stage. Large scale use of Thorium will subsequently follow making use of Uranium-233 that will be bred in Fast Breeder Reactors, when adequate nuclear installed capacity in the country has been built. Accordingly, the utilization of Thorium as a practically inexhaustible energy source has been contemplated during the third stage of the Indian nuclear programme, which can be reached after a few decades.

For the near term, the Government in July 2014, had announced tripling of the then existing capacity of 4780 MW in the next ten years, that is by the year 2024. A capacity of 1000 MW has already been added with the start of commercial operation of Kudankulam Nuclear Power Project Unit-1 (KKNPP 1) in December, 2014. The nuclear power capacity is expected to reach 10080 MW on progressive completion of projects presently under commissioning/construction by the year 2018.

Besides nuclear sciences, research and development work in fields such as electronics, medicine, biology, agriculture, metallurgy is also being done at some nuclear centers.

Advantage of fast breeder reactor

A fast **breeder reactor** is a nuclear reactor that generates more fissile material than it consumes.

In a nuclear reactor, fissile materials, such as U233 or U235 or Pu239 are harnessed for producing energy through fission. U233 and Pu239 are produced by conversion of the fertile materials Th232 and U238, respectively. The ratio of fissile material produced and fissile material destroyed is termed as 'conversion ratio'. The conversion ratio, if greater than 1, is called breeding ratio.

In view of higher operating temperatures specifically in SFR (>40%), it is possible to have high thermodynamic efficiency. High thermodynamic efficiency has additional advantage of less thermal pollution to the environment. With the use of advanced materials for the fuel clad and wrapper, higher burn ups of 100–200 GWd/tonne can be achieved, compared to 55 GWd/tonne for LWRs and 7 GWd/tonne for PHWRs.

Electricity generated by FBR would be a source of green energy as the waste from the first stage nuclear programme is reprocessed and used as fuel in FBR. The spent fuel from this reactor can be fed back into the reactor core several times, till the spent fuel contains only short-lived fission products. This is the concept of FBR with closed fuel cycle. Hence, there is no need of large quantity of fuel materials for the annual external feed and thus eliminates the need for large capacity waste storage spaces with complex construction features.

India has limited indigenous uranium (<“110 kt) and hence, FBRs are important due to its capability of efficient utilization of uranium. However, India has abundant thorium. The fast reactors also play important and essential role to exploit the thorium resources. Since thorium cannot straightway be used as nuclear fuel as it has no fissile isotopes, it can breed to give fissile isotopes (U233) by placing as blanket of Pu-U fueled fast reactors. However, premature introduction of thorium hampers the growth: increases the doubling time and hence, the introduction of thorium in the second stage would have to be done in a timely manner. Introduction of thorium without going to FBRs is extremely counterproductive, since the installed power capacity with thorium and plutonium being used together in thermal reactors will be insignificant given the India's requirements. The peak power level achieved briefly, with such premature use of thorium is very low (typically 36 GWe for a brief period) as compared to very high levels reachable through an optimum deployment strategy. Indian thorium is of the best quality available in the world and studies indicate that once the FBR capacity reaches about 220 GWe, thorium based fuel can be progressively introduced in the FBR in order to accelerate the third stage.

Apart from above, the Sodium cooled Fast Reactors (SFR), in particular would provide critical liquid metal technology and high temperature design inputs for fusion and high temperature reactor systems, being pursued in the country. These systems can provide electricity at competitive costs over long periods. In view of above advantages, FBRs are considered to be the most suitable and strong options for providing sustainable and environmentally acceptable energy systems and would be the mainstay of nuclear power programme in India.

17. 'Climate change' is a global problem. How India will be affected by climate change? How Himalayan and coastal states of India will be affected by climate change?

Hints:

Climate change is defined as the long-term change in earth's climate due to natural, mechanical and anthropological processes which result in emission of greenhouse gases like CO₂, methane, etc. These gases settle in the stratosphere and trap the heat within the atmosphere leading to global warming and changing climatic patterns.

Impact of climate change on India

- Climate change will make monsoons unpredictable. As a result, rain-fed wheat cultivation in South Asia will suffer in a big way. Total cereal production will go down. The crop yield per hectare will be hit badly, causing food insecurity and loss of livelihood.
- The rising levels of the sea in the coastal areas will damage nursery areas for fisheries, causing coastal erosion and flooding.
- The Arctic regions, Sub-Saharan Africa, small islands and Asian mega deltas, including the Ganga and Brahmaputra, will be affected most.
- Changes in climate around the globe are expected to trigger a steep fall in the production of cereals, as a rise of 0.5 degree Celsius in winter temperatures could cause a 0.45 tonne per hectare fall in India's wheat production. The average per hectare production in India is 2.6 tonnes.
- Due to this total agricultural land will shrink and the available land may not remain suitable for the present crops for too long. Farmers have to explore options of changing crops suitable to weather. These could lead to major food security issues for a country like India.
- Climate change will also cause huge coastal erosion due to a rise in sea levels of about 40 cm resulting from faster melting of glaciers in the Himalayan and Hindukush ranges. It can affect half-a-million people in India because of excessive flooding in coastal areas and also can increase the salinity of ground water in the Sundarbans and surface water in coastal areas.

- Unusual and unprecedented spells of hot weather are expected to occur far more frequently and cover much larger areas.
- At 2.5°C warming, melting glaciers and the loss of snow cover over the Himalayas are expected to threaten the stability and reliability of northern India's primarily glacier-fed rivers, particularly the Indus and the Brahmaputra. The Ganges will be less dependent on melt water due to high annual rainfall downstream during the monsoon season. The Indus and Brahmaputra are expected to see increased flows in spring when the snows melt, with flows reducing subsequently in late spring and summer.
- Alterations in the flows of the Indus, Ganges, and Brahmaputra rivers could significantly impact irrigation, affecting the amount of food that can be produced in their basins as well as the livelihoods of millions of people (209 million in the Indus basin, 478 million in the Ganges basin, and 62 million in the Brahmaputra basin in the year 2005).
- With India close to the equator, the sub-continent would see much higher rises in sea levels than higher latitudes.
- Sea-level rise and storm surges would lead to saltwater intrusion in the coastal areas, impacting agriculture, degrading groundwater quality, contaminating drinking water, and possibly causing a rise in diarrhoea cases and cholera outbreaks, as the cholera bacterium survives longer in saline water.
- Kolkata and Mumbai, both densely populated cities, are particularly vulnerable to the impacts of sea-level rise, tropical cyclones, and riverine flooding.
- The increasing variability and long-term decreases in river flows can pose a major challenge to hydropower plants and increase the risk of physical damage from landslides, flash floods, glacial lake outbursts, and other climate-related natural disasters. Decreases in the availability of water and increases in temperature will pose major risk factors to thermal power generation.
- Climate change impacts on agriculture and livelihoods can increase the number of climate refugees.

18. *On December 2004, tsunami brought havoc on fourteen countries including India. Discuss the factors responsible for occurrence of tsunami and its effects on life and economy. In the light of guidelines of NDMA (2010) describe the mechanisms for preparedness to reduce the risk during such events.*

Hints:

A tsunami is a series of large waves generated by an abrupt movement on the ocean floor that can result from an earthquake, an underwater landslide, a volcanic eruption or - very rarely - a large meteorite strike. The factors responsible for tsunami are:

- Earthquakes: Most tsunami are caused by large earthquakes on the sea floor when slabs of rock move past each other suddenly, causing the overlying water to move. The resulting waves move away from the source of the earthquake event. The 2004 tsunami occurred along a thrust fault in the subduction zone where the Indian tectonic plate is going below the overriding Burmese plate. As a result, the ocean floor broke and there was a vertical displacement of about 15 to 20 meters along the fault causing large scale displacement of water and thus, generating tsunami waves. This kind of large vertical displacement happened because the magnitude of the earthquake was greater than 9 and it occurred at a shallow depth of less than 30km below the ocean.
- Landslides: Underwater landslides can cause tsunami as can terrestrial land which slumps into the ocean.
- Volcanic eruptions: These occur in several ways:
 - a) destructive collapse of coastal, island and underwater volcanoes which result in massive landslides
 - b) pyroclastic flows, which are dense mixtures of hot blocks, pumice, ash and gas, plunging down volcanic slopes into the ocean and pushing water outwards
 - c) a caldera volcano collapsing after an eruption causing overlying water to drop suddenly.

Effect

Effect on human beings

- One of the biggest and worst effects of a tsunami is the cost to human life because unfortunately escaping a tsunami is nearly impossible. Hundreds and thousands of people are killed by tsunamis.
- People living in coastal regions, towns and villages have no time to escape. The violent force of the tsunami results in instant death, most commonly by drowning. Buildings collapsing, electrocution, and explosions from gas, damaged tanks and floating debris are another cause of death. The tsunami of December 2004 that struck South East Asia and East Africa killed over 31, 000 people in Sri Lanka only, leaving 23, 000 injured.
- Tsunami waves and the receding water are very destructive to structures in the run-up zone. The areas close to the coast are flooded with sea water, damaging the infrastructure such as sewage and fresh water supplies for drinking.
- Flooding and contamination of drinking water can cause disease to spread in the tsunami hit areas. Illnesses such as malaria arise when water is stagnant and contaminated. Under these conditions it is difficult for people to stay healthy and for diseases to be treated, so infections and illnesses can spread very quickly, causing more death.
- Tsunamis not only destroy human life, but have a devastating effect on insects, animals, plants, and natural resources.

Damage to economy

- Daily life for individuals in a nation affected by tsunami is altered by the damage the disaster can cause to the economy. Locations that were previously popular destinations for tourists suffer depression as a result of lost tourism, with visitors staying away out of fear and during reconstruction.
- Rebuilding after a tsunami puts a significant financial strain on governments as well, resulting in an economic downturn that can affect entire regions of the world.
- Also after a tsunami, work buildings are destroyed, this means that everyone loses their job or has to wait months, years for their work to build up again. If the city decides not to build the work space up again, thousands of people have to find new jobs. If people can't find new jobs, they won't have any money for a house food or water. This would mean that the society rate would decrease. Because people will be suffering from starvation or from dehydration.

The 2004 tsunami also prompted NDMA to formulate Tsunami Risk Management Guidelines to outline inter-agency roles and responsibilities, tsunami risk preparedness, mitigation and response.

- The Guidelines recommends practical and effective ways for awareness generation, capacity building, education, training and research & development for better tsunami risk management.
- The Guidelines explore options for effective dissemination of tsunami alert and warning messages generated by INCOIS to the concerned agencies and coastal vulnerable communities exposed to tsunamis in a coordinated manner.
- Structural Mitigation measures, as envisaged in the Guidelines, gives a brief guidance on design and construction of new structures as well as strategies for protecting lifeline and priority structures from Tsunamis along the seafront.
- The Guidelines urge BIS to roll out the pending construction standards entitled 'Criteria for Tsunami-Resistant Design of Structures'. It further recommends a robust techno-legal regime through efficient land use practices, bio shields, shelter belt plantation and mangrove regeneration with community involvement.

19. Mob violence in emerging as a serious law and order problem in India. By giving suitable example, analyze the causes and consequences of such violence.

Hints:

Mob violence is the verdict of the crowd by subverting the legal procedures and institutions and inciting violence.

Causes of Mob violence:

- Mob violence, including looting, typically ignites with little planning. Many who join are young people **attracted to excitement and the lure of defying authority.**
- Typically, a small percentage of hardened criminal characters do have an important role in instigating the unbridled lawlessness and setting the vicious tone of its chaos.
- **Organizational support:**
 - Mobs feel empowered as they also know that they enjoy impunity and patronage from the power.
 - Some organizations encourage youth for their gains and instigate violence
- **Social media effect:**
 - Social media and sometimes just rumors and false news spread like wildfire and mobs believe it and take action.
- **Lack of belief in the system:**
 - Perpetrators of vigilantism do not have faith that the criminal justice system will effectively punish the alleged criminals. They often tend to see the police as unresponsive or corrupt.
 - Vigilantes also do not believe that they will be held accountable for taking the law into their own hands when they assault or murder people
- **Unemployment:**
 - Rising unemployment of the youth and dissatisfaction with the system frustrates youth sorule of sentiments taking over the rule of law.
- **Excessive religious influence:**

Consequences:

- **Minorities:**
 - Mob violence has threatened not just the Muslim community but also other minorities.
 - Incidents involving churches and priests accused of converting Hindus to Christianity continue.
- **Mobilizes people fighting against mob violence** as well for instance recently in India a protest named 'Not in My Name' was launched against the recent incidents of mob killings.
- There is a very strong possibility that **such vigilantes would inevitable become criminal themselves**, because they have committed murder and have done something worse than that, rationalized the murder.
- If religious differences become a norm for hate crimes, **the culture of democracy is destroyed.**
- **Society turning fascist is a deeper moral crisis** than the coming of a fascist state.
- Loss of life and property. In 2016, seven members of a Dalit family were attacked by cow vigilantes in Gujarat.
- Religious polarization further takes place
- Loss of trust in government institutions.

Therefore improving policing at a local level and holding vigilantes accountable for their actions before courts of law will go a long way towards addressing this problem

20. *The scourge of terrorism is a grave challenge to national security. What solutions do you suggest to curb this growing menace? What are the major sources of terrorist funding?*

Hints:

In the post-cold war period international terrorism has emerged as a threat to the international political system in which states are primary actors.

Terrorism and national security:

- Terrorism is seeking to destabilize the geo-political order in several parts of the world. It is doing so in pursuit of an insane interpretation of faith and philosophy that is violently anarchic and allergic to diversity which is the essence of humanity and its habitat.
- The challenge of terrorism gets compounded when certain states use it as an instrument of their foreign policy. When the states begin covertly raising and indoctrinating bands of youth and equipping them with lethal weapons and weapon systems of mass destruction to promote their geo-political agenda, the magnitude of threat amplifies many times. It makes the task of defeating terrorism much more difficult
- For India, terrorist threats range from Left Wing Extremism (LWE), ethnic separatism to religious militancy. Most of these groups draw their inspirations from the international terrorist networks, particularly the popular ones, whose atrocities aim to undermine national interests.
- Terrorist organizations, through repeated attacks, aim to challenge the basic feature of the Indian state and through such action, highlight its inability to provide security and protection to its citizens.
- They aim to create an environment of fear and distrust between groups and communities that differ on ideological background.

Sources of terrorist funding:

- A major part of funding for terrorism from external sources comes through
 - Counterfeit currency
 - Drug trafficking
 - Charities, NGOs usually facilitate Terror funding through the following means
 1. By posing as legitimate entities.
 2. Exploiting legitimate entities as conduits for TF funds.
 3. Conceal or obscure legitimate diversion of funds meant for legal purposes.
 - **The role of Safe Havens, Failed States, and State Sponsors**
 - Whether through the absence of effective jurisdictional control, tolerance of terrorist organizations and their activities, or active support to terrorist organizations, safe havens, failed states and state sponsors create enabling environments or otherwise provide support to terrorist organizations.
 - India's federal counter-terrorism agency arrested seven members of Kashmir's main separatist alliance recently on charges of receiving funds from Pakistan-based militant groups to wage attacks
 - Remittances
 - Links of former Students Islamic Movement of India (SIMI) and Indian Mujahedeen (IM) cadres in India have also been established with financiers in the Gulf.
- **Internal funding:**
 - Extortion and Taxation
 - The biggest source of internal funding for terrorist groups in India remains extortion or taxation. This is especially relevant for groups in the North-East and the Maoist-affected area
 - Crime
 - The sequence of actions associated with crime used to raise funds for terrorism go through a process similar to extortion to include committing the criminal act, moving the proceeds and finally using it for terrorism.

- **Internet sources:**

- Cyber-attacks and with Bitcoins terrorist funding has become more discrete
- Credit card fraud

Solutions to curb terrorism:

- The Intelligence and Security agencies need to maintain a close watch to identify potential ISIS recruits and take further action, if necessary.
- The government has to focus on developmental issues and reducing economic disparities and enabling inclusive growth
- The government need to concentrate on effective border management through round the clock surveillance & patrolling on the border areas.
- Effective coordination and acting on early intelligence needs to worked on as seen in the instance of Pathankot attacks where terrorists are believed to have crossed the international border through the same sector from where the Gurdaspur attackers had infiltrated into India.
- **Lessons from Israel:**
 - **Efforts to strengthen the psychological endurance of the civilian population like Israel.**
 - **Defense against chemical and biological attacks-** Israel has developed sophisticated technologies for detecting explosives and arms at a distance, electronic eavesdropping and signals intelligence, and visual intelligence with unmanned aerial vehicles
- India needs to ensure high amount of on-ground security in India.
- Increasing efficiency of police force:
 - India's average police-population ratio (per 100, 000 population) is 138. The UN recommends 220 for peacetime.

