

DETAILS EXPLANATIONS**[PART : A]**

1. Bharatmala Pariyojana is a new umbrella program for the highways sector that focuses on optimizing efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through effective interventions.
2. National Income is the total value of all final goods and services produced by the country in certain year. The growth of national income helps to know the progress of the country.
3. The parameters used in HDI are :
 - **Health** : Life expectancy at birth.
 - **Education** : Mean years of schooling and expected years of schooling.
 - **Standard of living** : Gross national income on per capita basis (PPP).
4. Atal Pansion Yojna (APY) will be focused on all citizens in the unorganised sector, who join the national pension system, administered by the pension fund regulatory and development authority.
5. National Initiative on climate resilient Agriculture.
6. The act formally came into force on 12th October, 2005.
7. Rural Economy is the study of farm and non-farm industry, economic growth, development and change, size and spatial distribution of production and household units and interregional trade.
8. Unemployment rate is the percentage of total work force who are employed and are looking for a paid job.
9. Bitcoin is a piece of digital code which is used by people as currency. It was started by satoshi Nakamoto, whose real identity is still shrouded in mystery. The maximum number of bitcoins that can be created is limited to ~21 million.
10. Cryogenics is the branch of physics that deals with the production and effects of very low temperatures. The Large Hadron Collider (LHC) is the largest cryogenic system in the world and one of the coldest places on earth.
11. Green computing is the environmentally responsible and eco-friendly use of computers and their resources. In broader terms, it is also defined as the study of designing, manufacturing/engineering using disposing of computing devices in a way that reduces their environmental impact.

12. Social progress index (SPI), developed by the social progress Imperative, measures the extent to which countries provide for the social and environmental needs of their citizens.
The social progress index focuses exclusively on indicators of social outcomes, rather than measuring inputs.
13. BOT stands for Build-Operate-Transfer.
14. *State electricity distribution companies are favouring solar energy:*
- Lower tariffs is one of the reason.
 - Solar power helps discoms meet their peak power requirement.
 - The generation of solar energy can be forecast better, as compare to wind.
15. Conflict is defined as a clash between individuals arising out of a difference in thought process, attitudes, understanding, interests, requirements and even sometimes perception.
16. Fixed cost are the costs that tend to remain relatively constant whatever may be the volume of production.
17. Environmental protection act was enacted by the parliament of India in 1986.
18.
 - Water act
 - Air act
 - Environmental act
19. The primary carbon footprint is a measure of direct emissions of CO₂ from the burning of fossil fuels including domestic energy consumption and transportation.
20. Information technology means providing knowledge through communication by using methodology and technique. Software, e-mailing cellular phones and internet are examples of information Technology.
- [PART : B]**
21. Major benefits of demonetisation :
- Rise of the cashless economy.
 - Growth of the formal economy will be another associated long term gain.
 - Social shake up.
 - Demonetisation will reduce the circumference available of parallel economy.
 - Large number of new tax payers may appear with Demonetisation.
 - Rise in Financial Savings.

22. **Garibi Hato :**

Operation of vicious circle of poverty cause Garibi. Garibi Hatao or removal of poverty is perhaps was the slogan of Indian political party. The genuine steps of Garibi Hatao (Removal of poverty) are given below :

- Increase production in every sector of the country.
- Regularise infrastructure facilities.
- Jobs for all.
- Induction of professional, vocational and technical courses.
- Strong and strict discipline in every walk of life.
- Food, cloth and shelter for all.
- Economic independence for women.

23. Major role in social development-information technology is wonderful and valued asset. Internet is the force behind it. Information is the 6th source where as the remaining 5 sources are 5 m's men, Machine, material money and methods. Its major role in social development is described below :

- Provide interaction with customer 24 hours.
- Provide e-education and e-publishing.
- E-shopping and e-atlas.
- Construct the integrated information.
- Society is uplifted social development wise.

24. E-waste can broadly defined as electronic equipment and products which have become obsolete due to advancement of technology, changes in style and status and nearing the end of their useful life.

Examples of E-waste :

- Cell phone
- Land line phones
- Computer
- Calculators
- Plastic items like buckets, mugs
- Music i-pods

Bio-Degradable Waste :

The waste which can be dissolved and can be recycled are biodegradable waste.

- Pulp
- Paper
- Rubber
- Fossils
- Algae
- Skin of tree
- Card-board & plywood
- Tree and plant leaves

25. Collective name for a fog containing manmade air pollutants usually trapped near the ground by a temp. inversion. Constitutents can be smoke, sulphure dioxide, unburnt hydrocarbons and nitrogen oxides.

There are two types of SMOG :

- London SMOG is smoke from combustion of coal and fog. Fog is mainly mixture of SO_2 and SO_3 and humidity. It is generally harmful in the early morning and become worse after sunrise due to sunlight induced oxidation of SO_2 and SO_3 .
- Los angeles smog (Photochemical smog) is not related to smoke or fog. It is worst in the afternoon when sunshine peaks. The oxides of nitrogen (NO and NO_2) along with CO_2 , H_2O , CO and unburnt hydrocarbon particles which are emitted from automobile exhausts and SO_2 cause Los Angeles SMOG.

26. Irrigation is the process of providing water to land through atrifical means for the purpose of agriculture :

Type's of Irrigation : Depending on the topography, soil nature, rainfall different types of sources of water for irrigation are used.

- Tanks Irrigation
- Wells and Tube wells irrigation
- Canal irrigation

27. *Problems Associated with Indira Gandhi Canal :*

- There have been problems with water logging caused by excessive irrigation, seepage from canals and poor drainage. these factors produced a rise in the water table, increased salinity and a rise in the water table, increased salinity and finally submergence of the land.
- Vector borne diseases are spreading in the canal command area.
- The excessive irrigation and intensification of agriculture over the years has caused environmental degradation and creation of new wastelands. These problems have been exacerbated by the cultivation of water intensive cash crops.
- Vision to bloom the thar desert is threatened due to the hazards of "Desertification/land degradation" in form of water logging due to alarmingly rising ground water levels and sand dune reactivation.

28. The Bureau of Indian standards (BIS) is the national standards body of India working under the aegis of ministry of consumer Affairs, food and public distribution.

It is established by the Bureau of Indian standard act, 1986 which came into effect on 23 December, 1986. It's headquarters are in New Delhi. One of the major functions of the BIS is the formulation, recognition and promotion of the Indian standards.

29. Jaipur Metro Rail Corporation is a PSU under 100% ownership of the Government of the state of Rajasthan. Construction of the elevated part of the first line, called phase 1A, comprising 9.2 km, from Mansarovar to Chandpole Bazar, started on 13 November, 2010, and completed in 2014.

The Jaipur metro Rail system is India's sixth metro rail system after those in Kolkata, Delhi NCR, Bangalore, Gurgaon and Mumbai. Among the rapid transit system of India. It has been recorded fastest to conduct of trial run after starting construction, when it commenced trial run in Jaipur on 18 September, 2013.

30. *Objective of rural development :*

- To develop farm, home, public service and village community.
- To bring improvement in producing of crops and animals living condition.
- To improve health and education condition.
- To improve villagers with their own efforts.
- To improve village communication.

31. The IMF formally came into existence on 27 December, 1945.

The IMF's primary purpose is to ensure the stability of the international monetary system, the system of exchange rate and international payments that enables countries (and their citizens) to transact with each other.

32. SEZ means special economic zone. These are designated areas in a region set up by the government to attract foreign companies to invest in their countries.

Two features of special economic zones are :

- The companies who setup production in these areas are exempted from paying taxes for an initial period of five years.
- These areas are provided with best infrastructure facilities like road, water, transportation communication, market etc.

[PART : C]**33. Measurement of QoL**

“QoL is an inclusive concept which covers all aspects of living including material satisfaction of vital needs as well as more transcendental (prior knowledge) aspects of life such as personal development, self-realisation and a healthy eco-system”.

Quality of life give much importance not to numbers alone as mentioned above but the quality of things so produced. So it is immaterial to think as how many institutions and educational centres have been opened what matters is the quality of students coming out or passing out from these institutions. Are they intelligent, disciplined having mental abilities and aptitudes ? Whether their faculties and talents have been fully developed ? Can they after completion of their education inspire other with their personal qualities. Similarly in the field of health it does not matter how many doctors do we have but what matters is the qualities of doctors produced. So the quality of life is related to such things as increase in expectancy of life, better food, skill formation etc. It is basically concerned with the degree of progress made towards achieving minimum levels of literacy, expectation of life at birth and reduction in infant mortality. Literacy enables people to participate in the process of development and take full advantages of cultural progress. Reduction in infant mortality relates to environmental cleanliness and availability of clean water.

Data of PQoL (Quantitative aspect or physical quality of life) show that GNP per capita is not always a good sign of PQoL. In this connection example of Sri Lanka and Kerala is often quoted. Both the places are poor in terms of per capita income but they achieved high levels of literacy, life expectancy and reduction in infant mortality rate.

Determinants of QoL :

Recently, United Nations (1990) has identified 10 major concerns of quality of life and they are (i) health, (ii) education, (iii) culture and time use, (iv) housing, (v) environment, (vi) public safety, (vii) employment and working life, (viii) income, consumption of wealth. (ix) social welfare and popular participation. It is concluded that development process needs both quality and quantity to be rationally (wisely) balanced.

34. Non-Conventional Energy Sources :

The growing demand of power alone cannot be met through thermal power projects. Whatever energy we capture from these sources is called conventional energy. Non-conventional energy sources are different, *Energy from water, wind power, biogas, biomass and solar refer to energy from non-conventional sources.* Efforts are therefore being made to develop non-conventional energy resources which are either non-exhaustible or renewable. It is also understood that water resources are limited only to relatively fewer regions and in view of this greater stress is laid on harnessing wind power, solar energy and development of biogas and biomass projects.

- **Biogas :**

It is cheap and efficient fuel and its feedstock is renewable. Indigenously developed biogas technology has helped in harnessing the fuel value of organic waste materials. The social harnessing of the fuel value of the organic waste materials and the social benefits of biogas are :

- (i) *Reduction in felling of trees for fuel and the consequent deforestation*
- (ii) *Reduction in the incidence of the diseases among village women and children*
- (iii) *Improvement in rural sanitation*
- (iv) *Easy cooking*
- (v) *Strategic priority to the biogas by DNES (Department of Non-conventional energy sources)*
- (vi) *Driving IC engines for pumps*
- (vii) *Biogas residue used as manure*
- (viii) *Energy conservation of fossil fuels.*

In view of the large social benefits in the use of biogas energy, the National Programme on *Improved Chulhas* has been launched with optimum size of combustion chamber, air inlet efficiency of ranging from 20 per cent chulhas.

- **Biomass:**

It is a potential source of renewable energy for use as a solid, liquid and gaseous fuel. It offers an important alternative substitute to petroleum products. Under the biomass programme, a number of activities relating to assessment, production, improvement, conversion and utilization of biomass are undertaken. A chain of biomass research centres has been established to conduct research for increasing productivity of fuelwood trees and shrubs grown under different agro-climatic and soil conditions in the country. From the timber and leaves of these trees and bushes, fuel of high thermal efficiency is developed-for domestic and industrial energy requirements.

- **Gobar Gas or Biogas :**

Gobar gas or bio-gas is a gaseous fuel obtained from biomass by the process of anaerobic digestion (fermentation). The in feed of biogas are organic waste, slurry, sugar bagasse, poultry waste, butchery waste, husk waste, animals dung, droppings, stomach contents and undigested straw of animals when slaughtered, water hyacinth, algae, tree and banana leaves, piggery waste, fruit skins, and left overs. Studies reveal that 1 kg of dung gives about 45 litre of biogas, about 0.5 m³ of biogas can be obtained from one kg of slaughter house waste.

- **Solar Energy :**

The Energy transmitted from sun in the form of *electromagnetic radiations* is called solar energy.

Energy from the Sun :

Life on the earth rely entirely on solar energy. It provides the energy needed for plant growth by photosynthesis and animals obtain their energy from plants and other animals. Fossils fuel also depend ultimately on photosynthesis. Hydroelectric power, Wind power and Wave power all depend on the Sun's energy through its influence on the weather.

The amount of energy falling on the earth from the sun is given by the solar constant. If all the energy could be harnessed, every inhabitant of the earth could burn 12000 × K2KV hectares continuously. But in fact very little direct use has been made of the solar energy. Broadly there are two ways of using solar energy directly.

- (i) The thermal method which involve absorbing the Sun's radiation on a metal plate and using the absorbed heat to raise the temperature of water.
- (ii) Non thermal methods use devices such as solar cells, to produce electricity from the sunlight.

This method is used in space crafts, satellites etc.

- **Wind Energy :**

Energy from wind is called wind energy. The Wind Energy potential in the country is being harnessed through the Wind Energy Programme. Under this programme, 2252 wind pumps, 6 wind power generation stations of aggregate capacity of 6 MW have been set up so far. A demonstration programme for water pumping wind mills has been taken up to obtain larger user response and provide for a large scale extension of the programme. The largest wind power complex in the country is in Kukru village of Beta district in Madhya Pradesh. It is learnt from the Madhya Pradesh Urja Vrkas Nigam that the 3.5 MW energy will be harnessed from Satpura range.

- **Geothermal Energy :**

Geothermal heat or heat generated in the bowels of the Earth is being forced by radioactivity. The heat remains stored up in the interior of the earth, because there are no natural outlets for escape, except the Volcanoes. This stock is gigantic and promises to be an inexhaustible source of energy. The richest geo-thermal resources lie along the so called Ring of Fire that stretches from New Zealand up through New Guinea.

35. Inclusive growth means, growth among all sections. Every section must contribute to that growth and benefits of that growth must reach to every section of society. It at all section want to contribute to the growth, they must have capacity to involve in economic activities. For that govt. must provide health, education, skills, employment, opportunities, infrastructural facilities. Good governance are the features of the inclusive growth. After liberlisation India is experiencing high amount of growth consistently, but this growth is contributed some section and some sections only, though our GDP is rising people are not getting the benefits out of it. That is why govt in its 11th and 12th five year plans emphasized on inclusive growth. In this growth model every section particularly vulnerable section are given more emphasis. They are empowered with necessary basic requirements, basic structural infrastructural facilities, for examples education for all, health facility for all, improve the institutional deliveries reducing the IMR, MMR. Creating employment, targeting the agriculture growth, labour issues, problems of unorganised sector workers, womens participation in work force, empowerment of specially abled persons, investment attraction, creating basic enmities etc. If we provide them then antomatically that growth becomes inclusive growth.

36. ***Salient Provision of the 2013 Act. :***

- **Definition of Public Purpose:**

The act defines 'public purpose' as the project which involves land acquisition for strategic purposes relating to naval, military, air force and armed forces of the Union, including central paramilitary forces or any work vital to national security or defence of India or State police, safety of the people, for infrastructure projects involving agro-processing, supply of inputs to agriculture, warehousing, cold storage facilities, marketing infrastructure for agriculture and allied activities such as dairy, fisheries, and meat processing set up or owned by the appropriate Government or by a farmers' cooperative or by an institution, for industrial corridors or mining activities, national investment and manufacturing zones as designated in the National Manufacturing Policy.

Other domain which falls under public purpose are projects for housing for lower income groups or landless or to persons residing in areas affected by natural calamities or to persons displaced or affected by reason of the implementation of any scheme undertaken by the Government.

- **Consent Clause :**

When government acquires the land directly for 'public purpose' consent of the land owner is not required. However, when the government acquires the land for private companies, the consent of at least 80% of the project affected families shall be obtained through a prior informed process. In case of acquisition of land for public private project then the consent of at least 70% of the affected families should be taken.

- **Emergency Acquisition:**

Under this the land acquisition can be expedited if it relates to national defense, security and rehabilitation of affected people from natural disasters or emergencies.

- **Limits on Acquisition :**

The act does not allow acquisition of land under multi cropped area. The act also mandates that in case of acquisition of multi cropped area under exceptional circumstances, an equivalent area of culturable wasteland shall be developed by the state for agricultural purposes or an amount equivalent to the value of the land acquired shall be deposited with the appropriate Government for investment in agriculture for enhancing food-security.

In case of acquisition of other agricultural land, total acquisition should not exceed the limit as specified by appropriate authority. These limits shall not apply to projects that are linear in nature which include projects for railways, highways, major district roads, power lines, and irrigation canals.

- **Compensation :**

It will be four times the market value of land in rural areas and twice in urban areas. The market value of the land will be set as higher of minimum land value, if any, specified in the Indian Stamp Act, 1899 or average of the sale price for similar type of land being acquired, consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership projects.

- **Land Acquisition, Rehabilitation and Resettlement Authority:**
The appropriate Government shall, for the purpose of providing speedy disposal of disputes relating to land acquisition, compensation, rehabilitation and resettlement, establish one or more Authorities to be known as the Land Acquisition, Rehabilitation and Resettlement Authority to exercise jurisdiction, powers and authority conferred on it by or under this Act. The Authority shall consist of one person only to be appointed by the appropriate Government with powers of civil court. He must be either qualified to be a District Judge or must have seven years law practice experience.
- **Social Impact Assessment :**
Before the acquisition process starts the government has to carry out a social impact study along with consultation involving local authorities viz. Gram Sabha, Panchayat, Municipality or Municipal Corporation. Appropriate Government shall ensure the completion of the Social Impact Assessment study within a period of six months from the date of its commencement.
The purpose of the study is to assessment as to whether the proposed acquisition serves public purpose, estimation of affected families and the number of families among them likely to be displaced extent of acquisition etc., extent of lands, public and private, houses, settlements and other common properties likely to be affected by the proposed acquisition. The report is submitted to an expert committee who can after due consideration can also disapprove the project.
- **Exemption from Social Impact Assessment:**
Where land is proposed to be acquired invoking the urgency provisions, the appropriate Government may exempt undertaking of the Social Impact Assessment study.
- **Land left Unused After Acquisition:**
If the land acquired is not utilized then the period provided in Section 101 for return of unutilized land has been modified to five years or the period specified for the completion of the project.
- **Hearing of Objections**
To facilitate the process of hearing of objections by land losers, the authority, constituted for this purpose, shall hear such objections within the district where the land has been acquired.

37. Advantage and Disadvantage of BOT project :**• Advantages of BOT project**

- (i) Use of private sector financing to provide new sources of capital, which reduces public borrowing and direct spending and which may improve the host government's credit rating.
- (ii) Ability to accelerate the development of projects that would otherwise have to wait for, and compete, for sovereign resources.
- (iii) Use of private sector capital, initiative and know-how to reduce project construction costs, shorten schedules and improve operating efficiency.
- (iv) Allocation to the private sector of project risk and burden that would otherwise have to be borne by the public sector.
- (v) The involvement of private sponsors and experienced commercial lenders, which ensures an in-depth review and is an additional sign of project feasibility.
- (vi) Technology transfer, the training of local personnel and the development of national capital markets.
- (vii) In contrast to privatisation, government retention of strategic control over the project, which is transferred to the public at the end of the contract period.
- (viii) The opportunity to establish a private benchmark against which the efficiency of similar public sector projects can be measured and the associated opportunity to enhance public management of infrastructure facilities.

• Disadvantages of BOT

- (i) Transaction costs are high, they amount to 5-10% of total project cost.
- (ii) Not suitable for smaller projects. Victorian Government of Australia has suggested that projects with a value of less than Australian dollar \$15 are unlikely to gain benefits from BOT delivery method.
- (iii) The success of BOT project depends upon successful raising of necessary finance. Various costs such as cost of construction, equipment, maintenance should be committed during the life of the project.
- (iv) BOT projects are successful only when substantial revenues are generated during the operation phase.

38. Drought is the absence of water for a long period of time at a place where it is considered 'not normal' compared to its usual conditions. It is the condition that results when the average rainfall for an area drops below the normal amount for a long time. The low rainfall is insufficient to meet the needs of human beings, plants, animals and agriculture.

Drought is caused by not only lack of precipitation and high temperatures but also by overuse and overpopulation. Droughts may not be an issue just because there is less or no precipitation but it becomes an issue when it begins to affect water supply for irrigation, municipal, industrial, energy, and ecosystem function.

Types of Drought :

There are some indicators that experts use to determine if a condition can be called a drought. Short fall in rain results in drying of rivers, lakes, reservoirs and drying of wells due to excessive withdrawal and poor recharge of ground water and loss of crop yield due to shortage of water are some of the main indicators of drought. These indicators help local authorities, states or governments use to plan and release appropriate relief resources to affected areas.

Besides those, here are some common scenarios of droughts:

(i) Meteorological Drought :

This kind is usually determined by the general lack of moisture in the weather such as lack of precipitation and other weather conditions such as dry winds, high temperatures and so on. It is expressed in relation to the average conditions of the region over a long period of time. It is usually an indicator of potential water crisis if the condition is prolonged. Meteorological drought can begin and end immediately.

(ii) Agricultural Drought :

This is determined when atmospheric moisture is reduced to the extent that soil moisture is affected. Here crops and animals are affected and evapotranspiration is also affected. It is often the signs one sees when a meteorological drought is at play, but not before a hydrological drought.

(iii) Hydrological Drought :

This is when there is a deficiency of surface water and ground water supply in a region, often as a result of less precipitation, excessive reliance on surface water for farming, energy and other needs. Hydrological drought does not usually occur at the same time as meteorological drought. In a way, this decline in the quantity and quality of surface and sub-surface water is the effect of meteorological drought.

(iv) Socioeconomic Drought :

This condition is when some supply of some goods and services such as energy, food and drinking water are reduced or threatened by changes in meteorological and hydrological conditions. Sometimes it is even made worse by growing populations and excessive demands of such goods to the point that it creates stress on the little water available. It takes a very long time for this kind of drought to get into full gear and a long time to recover from it.

39. Solid material suspended in the water would make the river cloudy, block sunlight, contain biodegradable materials and eventually settle to the bottom. The biodegradable materials would extract oxygen from the river and reduce what is available for fish and other forms of life. Nitrogen and phosphorous are nutrients in the wastewater that stimulate growth of algae. When the plants die they extract oxygen from the water as they decay. Finally, there are bacteria in waste water, some capable of causing disease.

Following are the methods how the pollutants in the wastewater are treated.

(i) Treatment of Sewage :

The sewage can be treated by a modern technique involving three steps— primary treatment, secondary treatment and tertiary treatment.

• ***In primary treatment :***

Sewage is passed through a grinding mechanism. This is then passed through several settling chambers and lime is added to neutralise it. The neutralised sewage still contains a large number of pathogenic and non-pathogenic organisms and sufficient amount of organic matter.

• ***In the secondary treatment :***

These neutralised effluents are passed through a reactor called UASB (Up flow anaerobic sludge blanket). In this reactor, the anaerobic bacteria degrade the biodegradable material into neutralised effluents. In this process, the foul odour and methane are released and the sewage is converted into clean water. This water is sent to aeration tanks where air and bacteria are added to it. This process is called biological or secondary treatment. The water obtained as a result of secondary treatment is still unfit for drinking and needs further purification. This is done by tertiary treatment.

• ***In tertiary treatment :***

Which is a disinfecting process, final traces of disinfecting bacteria and any dissolved organic solids are removed. Then the chlorination, evaporation and exchange absorption methods are employed to obtain clean water.

(ii) Using chemical Methods :

Several chemical methods have been devised for the treatment of industrial effluents before discharging them in water bodies:

- ***Reverse Osmosis :***

It involves the purification of water with the semi permeable membrane. Reverse osmosis will remove feed water bacteria, organics and silica and reduce the dissolved salt content by greater than 95% only.

- ***Precipitation :***

This process transform dissolved contaminants into an insoluble solid, facilitating the contaminant's subsequent removal from the liquid phase by sedimentation or filtration.

- ***Coagulation :***

Chemical coagulation enhances the removal of colloidal particles by destabilising and chemically precipitating them and accumulating the precipitated material into larger floe particles which can either removed by gravity setting or filtration.

