

PAPER- I

Test Booklet- D

ANSWERS

1. **d**
2. **d. Exp:** Aspartame is the most successful and widely used artificial sweetener and has been sold under the brand name AminoSweet since 2009. It is roughly 200 times sweeter than sucrose, table sugar. The quantity of aspartame needed to produce a sweet taste is so small that its caloric contribution is negligible. Its use is limited to cold food and soft drinks because it is unstable at cooking temperature. However, its breakdown products include phenylalanine; aspartame must be avoided by people with the genetic condition phenylketonuria (PKU).
3. **a. Exp:** Sir William Wedderburn, a retired English civil servant, was actively involved in Congress politics, becoming its President twice (1889—Bombay Session & 1910—Allahabad Session). In between he became a Liberal member of the British Parliament, where he set up the Indian Parliamentary Committee and acted as its Chairman between 1893 and 1900 to voice India’s grievances in the House of Commons.
4. **c. Exp:** Light Emitting Diode (LED) is a semiconductor Diode. LED consists of p-n (positive-negative) junction made of Semi-conducting material. When connected to a power source, current flows from the p-side or anode to the n-side, or cathode, but not in the reverse direction. Charge-carriers i.e. electrons and electron holes flow into the junction from electrodes. When an electron meets a hole, it falls into a lower energy level, and releases energy in the form of a photon (light). Mercury is an essential ingredient for most energy efficient lighting products, including CFLs. It is the mercury that excites phosphors in a CFL, causing them to glow and give light. When electric current passes through mercury vapor, the mercury emits ultraviolet energy. When this ultraviolet energy passes through the phosphor coating, it produces light very efficiently.

Energy Efficiency & Energy Costs	LEDs	CFLs
Life Span (average)	50,000 hrs	8,000 hrs
Watts of electricity used (equivalent to 60 watt bulb). LEDs use less power (watts) per unit of light generated (lumens). LEDs help reduce greenhouse gas emissions from power plants and lower electric bills	6-8 watts	13-15 watts

5. **a. Exp:** The Oilzapper is essentially a cocktail of five different bacterial strains that are immobilized and mixed with a carrier material (powdered corncob). The Oilzapper feeds on hydrocarbon compounds present in crude oil and oily sludge (a hazardous hydrocarbon waste generated by oil refineries) and converts them into harmless CO₂ and water. The Oilzapper is neatly packed into sterile polythene bags and sealed aseptically for safe transport. The shelf life of the product is three months at ambient temperature. The oil zapping bacteria was developed over a period of seven years by The Energy and Resources Institute (TERI) and the project was supported by the Department of Biotechnology (Government of India) and the Ministry of Science and Technology.
6. **a. Exp:** Couple with AB positive blood group consist of A+ and B+ gene and with O negative blood group consist of O- gene. A+ gene is dominant over O- gene which results into A+ blood group in one child. B+ gene is dominant over O- gene which results into B+ blood group in other child. Only these two possibilities can be possible from above cross. So the rest of the blood group O+ will be of the adopted son.
7. **d. Exp:** “Unto this Last” was an essay on economy written in 1860 by the English Catholic Socialist, John Ruskin. It was read in 1904 on a train journey by Gandhiji, who was tremendously influenced by it as seen from his admissions.
8. **a. Exp:** Usha Mehta (1920-2000) was too young to participate in the Round Table Conference in the early 1930’s. She was also not involved either in the INA or Interim Government formation, because she was serving a 4-year prison sentence (1942-46) for running the secret Congress Radio for 3 months (August 14 to November 12, 1942).
9. **b**
10. **b. Exp:** Complete Independence (Purna Swaraj) was an agenda of the Congress from the Lahore Session (December, 1929), and not that of the All-Parties Conference (1928), which appointed the Nehru Committee (1928). Nehru Report (1928) definitely did not recommend it.
11. **b. Exp:** The orchids are flowers of exquisite beauty and variety of patterns belong to one of the largest family, the Orchidaceae. The orchids are worldwide in distribution with greater concentration in tropical and sub-tropical regions of high humidity. In India, they form 9% of our flora; nearly 1300 species in 140 general dwell in the country with Himalayas as their main habitat and others scattered in eastern &

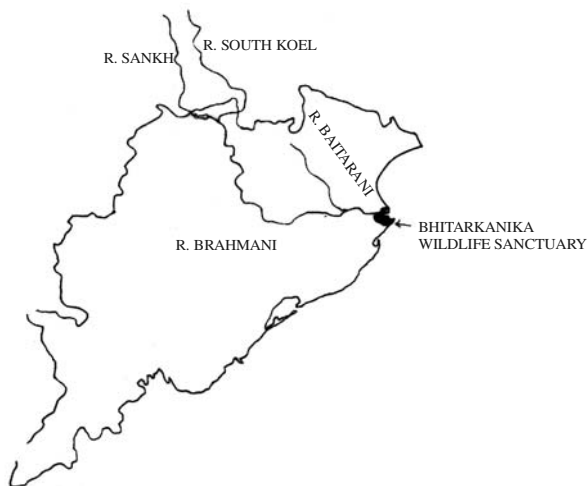
western ghats.

Fortunately, India has all the potentials for development of a successful orchid industry on scientific basis; it has varied and suitable climate and almost all the important commercial varieties of orchids. Sikkim, Arunachal Pradesh and Himachal Pradesh are Orchid rich areas in India. There is also a tremendous potential for growing there plants, on commercial scale along the coastal region of Maharashtra, Andhra Pradesh, Tamil Nadu and Karnataka.

12. **b.**
13. **a. Exp:** Metropolitan Planning Committee is a Constitutional body as per the 74th Constitutional Amendment Act 1992. One of its important functions is to prepare the draft development plans for metropolitan area.
14. **b. Exp:** Interim budget is a budget which avoids making big policy choices and it is passed for a few months in a fiscal year. For example, the 2009 budget presented by the UPA-1 a few months before the general election was an Interim budget even though UPA-1 was not an Interim government at that time.
15. **c. Exp:** IMF grants loans to only member countries. The current membership is 187. The IMF works to foster global growth and economic stability. It provides policy advice and financing to members in economic difficulties and also works with developing nations to help them achieve macroeconomic stability and reduce poverty.
16. **b. Exp:** Bio-asphalt is an asphalt alternative made from non-petroleum based renewable resources. These sources includes sugar, molasses, rice, corn, potato starch, natural tree and gum resins, natural latex rubber and vegetable oils, lignin, cellulose, palm oil waste, coconut waste, peanut oil waste, canola oil waste, potato starch, dried sewerage effluent and so on. Bitumen can also be made from waste vacuum tower bottoms produced in the process of cleaning used motor oils, which are normally burned or dumped into land fills. Non-petroleum based bitumen binders can be colored, which can reduce the temperatures of road surfaces and reduce the urban heat islands.
17. **d. Exp:** The main emissions from coal combustion at thermal power plants are carbon dioxide (CO₂), nitrogen oxides (NO), sulfur oxides (SO), chlorofluorocarbons (CFCs), and air-borne inorganic particles such as fly ash, soot, and other trace gas species. Carbon dioxide, methane, and chlorofluorocarbons are greenhouse gases. These emissions are considered to be responsible for heating up the atmosphere, producing a harmful global environment. Oxides of nitrogen and sulfur play an important role in atmospheric chemistry and are largely responsible for atmospheric acidity. Particulates and black carbon (soot) are of concern, in addition to possible lung tissue irritation resulting from inhalation of soot particles and various organic chemicals that are known carcinogens.
18. **a.**
19. **b. Exp:** Though there is pressure on agricultural land, but the area has not declined by 30 percent. In fact, total area under foodgrain crops during the last five years has been between 120 and 124 million hectares. Yearly increase and decrease in various crops can be seen due to weather conditions but overall there is no decline in total cropped area under food segment. Increase in price is due to lower growth rate of production as compared to rising demand. The growth rate of demand has been higher because of rise in income and supply side management constraints.
20. **d. Exp:** A gene is a distinct portion of a cell's DNA. Genes are coded instructions for making everything the body needs, especially proteins. Human beings have about 25,000 genes. Some of our genes are associated with disorders (**hemophilia, colorblindness, cystic fibrosis or Huntington's disease**). The same concept is also applicable in livestock and animal breeds. In gene therapy these gene sequences are either modified or replaced to overcome genetic disease both in plants and animals to get disease resistant individuals. Gene sequencing is also use to know pedigree (generation chart) of livestock as well as human beings.
21. **a. Exp:** Any visit of foreigners mean utilization of our goods and services during their stay in the country and they will be paying for these goods and services. This is exports of goods and services and in the process earning of foreign exchange.
22. **c. Exp:** A microbial fuel cell is a device that converts chemical energy to electrical energy by the catalytic reaction of microorganisms. A typical microbial fuel cell consists of anode and cathode compartments separated by a cation (positively charged ion) specific membrane. In the anode compartment, fuel is oxidized by microorganisms, generating electrons and protons. Electrons are transferred to the cathode compartment through an external electric circuit, while protons are transferred to the cathode compartment through the membrane. Electrons and protons are consumed in the cathode compartment, combining with oxygen to form water. Microbial fuel cells have a number of potential uses. The most readily apparent is harvesting electricity produced for use as a power source. Virtually any organic material could be used to feed the fuel cell, including coupling cells to wastewater treatment plants. Bacteria would consume waste material from the water and produce supplementary power for the plant.
23. **b. Exp:** Fiscal stimulus basically means use of fiscal tools to boost demand in the economy if the economy is facing the problem of deficiency in demand. The fiscal tools are: reduction in tax rates and higher spending by the government. In both the cases the purchasing power of the people will increase and boost demand in the economy.
24. **b.**
25. **d. Exp:** There can be an effect on current account deficit if capital account inflow is more. So the probable answer is (d). Though statement (3) is wrong, the examiner might have chosen option (d).
26. **c. Exp:** The constitution of District Planning

Committee is as per the 74th constitutional amendment and not the 73rd constitutional amendment.

27. **a. Exp:** River Brahmani (head streams South Koel and Sankh in Jharkhand) meets the Baitarani river (origin in Kendujhar, Orissa) in the East coast of Orissa in Kendra-Para district and forms a tidal maze of muddy creeks and mangroves. Here lies the Bhitarkanika wildlife sanctuary which is the place for conservation of crocodiles and turtles.



28. **c. Exp:** Inflation rate is calculated as the change in average price levels with respect to previous year. So, previous year is the base for calculating the change. If last year, the price rise was sharper as compared to the current year, the inflation rate will be falling.
29. **a. Exp:** India's large pool of young population especially below 15 years is a valuable asset for the country but with a demographic divide.
30. **d**
31. **d. Exp:** Under 'Universal Declaration of Human Rights', Right to Education, Right to equal access to public service and Right to food are mentioned under Art 26, Art 21 (2) and Art 25 respectively. All of these are under the 'Universal Declaration of Human Rights'.
32. **a. Exp:** Marine algal bloom in the Bay of Bengal and Arabian Sea is mainly due to the upwelling/uplifting or slope water intrusion, eutrophication due to the enrichment of phosphorus and nitrogen and Run-off from the land during monsoon dissolves phosphate attached to sediments. The marine algal bloom is due to the above three factors but the question is specifically about increase in harmful algal bloom in the sea water of India. Neither Runoff during monsoon increases the harmful algal bloom nor the upwelling in the seas. So the most suitable answer is discharge of the nutrients from the estuaries.
33. **c.**
34. **d. Exp:** Wassenaar arrangement is established to contribute to regional and national security by

promoting transparency and greater responsibility in transfer of conventional arms and dual use goods and technology. Both Australia Group and Wassenaar arrangement comprise of countries from European Union and American continents.

35. **c. Exp:** The most fundamental reason is the anomalous expansion of water. At 4°C, water has maximum density and sinks down to the bottom of the lake but as the temperature reduces further, the surface of the lake will slowly get frozen and the ice on the top will act as a bad conductor. Now the most appropriate option is (c).
36. **b.**
37. **d. Exp:** La Nina is a complex ocean atmosphere phenomenon which is a part of the broader El-Nino Southern Oscillation climatic pattern. During the La Nina, the sea surface temperature across the equatorial Eastern central Pacific Ocean will be lower than normal by 3-5°C. Both El-Nino and La Nina has adverse effect on the Indian Monsoon.
38. **d. Exp:** The Permanent Settlement of Lord Cornwallis completely changed the agrarian relations of British India. However, none of the provisions given in the question is directly related to the tendency for increased litigation.
39. **a. Exp:** Though the Revolt of 1942 was originally meant to be a non-violent movement like earlier Gandhian movements, it became a violent mass movement from the beginning due to the British crackdown on all Congress leaders from the top to the bottom.
40. **c. Exp:** Though the factors mentioned in a), b) & c) also played important role in most of the tribal revolts of the 19th century, the disruption of old agrarian order of the tribes (choice d) was undoubtedly the most important common cause for all the tribal revolts.
41. **d. Exp:** Explanations given in choices a) & b) are true, while explanation given in c) is wrong. Monsoon route no doubt existed between the west coast of India and the east coast of Africa across the Arabian Sea.
42. **b.**
43. **d. Exp:** Micro-irrigation is the essence of dryland agriculture.
44. **a. Exp:** "Home Charges" meant all the expenditure incurred by the Home Government in England which was officially called the "India Office".
45. **a. Exp:** Due to a severe drought in the Kheda district of Gujarat, the peasants were not able to pay the normal land revenue in 1918. Hence, they wanted a remission or suspension of land revenue, which they got with Gandhiji's help.
46. **d. Exp:** The mangrove trees have very strongly webbed, net like complex roots, which helps them to resist strong waves and storms and the mangrove forest acts as a barrier to them.
47. **a. Exp:** The Jain philosophy is dualistic in nature, holding that the world consists of two eternal, uncreated, coexisting but independent categories, viz. jiva and ajiva. There is no separate Creator or

Preserver, except the Universal (Natural) Law.

48. **b. Exp:** Due to the salinization process, the irrigation water accumulated in the soil evaporates leaving a hard salt and mineral cover, which sometimes make the soil impermeable.
49. **b.**
50. **a. Exp:** Teaser loans are loans in which for the first couple of years, rate of interest is concessional (sub-prime) but after that it becomes normal which is higher as compared to the initial rate. Consequently, borrowers may face difficulty in repayment, once the EMI increase due to higher rates of interest. In India these loans were offered by banks in housing segment.
51. **c.**
52. **d. Exp:** Growth rates of GDP and per capita income in the last five years are not steady. Due to global financial crisis and consequently recessionary and deflationary tendencies in the global economies, growth rate declined in 2008-09 drastically and then started recovering in 2009-10 and 2010-11 but it is still lower than the levels achieved in 2006-07.
- | Year | Growth rate of GDP | Growth rate of Per capita income |
|----------|--------------------|----------------------------------|
| 2006-07 | 9.6 | 7.9 |
| 2007-08 | 9.3 | 8.1 |
| 2008-09P | 6.8 | 4.8 |
| 2009-10Q | 8.0 | 6.1 |
| 2010-11 | 8.6 | NA |
53. **a. Exp:** Commercial banks had total outstanding loans of Rs 285,799 crore which is 74% of the total loans given by the three lending institutions- commercial banks, RRBs, and cooperative banks. Microfinance institutions total lending to agriculture and allied activities was less than the amount given by the commercial banks.
54. **d. Exp:** All the methods are for helping in employment generation, income generation or human resource creation. All the three are tools to attain inclusive growth.
55. **d. Exp:** Since 2004, the declared objective of disinvestment is to increase resources for social sector spending and restructuring of PSEs. The declared policy is to retain the management control and sell only upto 49% equity.
56. **b. Exp:** There is no definite comets belt in our solar system, though the concentration of comets are more in the oort-cloud belt.
57. **b. Exp:** With the growth of the economy, there is increase in employment and income levels. This increases demand in the economy and there is demand pull inflation in a growing economy.
58. **c. Exp:** Lowering of bank rate means that banks can borrow at lower rate from the RBI and this may lead to lowering of interest rates in the banks. At lower interest rates, there will be less incentive to the depositors and banks will mobilize fewer resources through deposits. Also, rates affect the lending rates while ratios (CRR and SLR) affect liquidity in the banking system.
59. **a. Exp:** Coriolis force is equal in both the hemispheres at their respective latitudes.
60. **b. Exp:** Deepening the Malacca straits between Malaysia and Indonesia will ease the traffic but will not reduce the distance between India and East Asia. Opening a new Canal across the Kra Isthmus between the Gulf of Siam and Andaman Sea will reduce the distance between them and also the transit time. So, the most suitable answer is (b).
61. **d. Exp:** Value Added Tax is levied in the whole production and distribution chain. In India, CENVAT is a VAT –based tax and levied by the central government but state level VAT is levied by the state governments.
62. **d. Exp:** A closed economy means no relationship (give or take/import and export) from other countries.
63. **b. Exp:** Bark consists of phloem which transport food from leaf, where it is synthesized, to rest of the plant parts including roots. If bark is removed in circular fashion, root will not be able to get food nutrition and will die due to starvation.
64. **a. Exp:** New START (for Strategic Arms Reduction Treaty) is a nuclear arms reduction treaty between the United States of America and the Russian Federation with the formal name of *Measures for the Further Reduction and Limitation of Strategic Offensive Arms*. It was signed on 8 April 2010 in Prague, and, after ratification, entered into force on 5 February 2011. It is expected to last at least until 2021.
- New START replaced the Treaty of Moscow (SORT), which was due to expire in December 2012. In terms of name, it is a follow-up to the START I treaty, which expired in December 2009, the proposed START II treaty, which never entered into force, and the START III treaty, for which negotiations were never concluded.
65. **c.**
66. **b.**
67. **b. Exp:** Marine upwelling zones are associated with upwelling of decomposed microorganism, fine sediments, abyssal clay and oozes etc. So it is associated with transfer of nutrients to the surface. If we consider statement 1 as correct statement, 3 will also be a correct statement. There is no option for all the three correct statements. Hence the closest answer is (b)
- In the upwelling zone, there are plenty of planktons but they are not the bottom dwelling organisms. Plankton grows in such zones because of availability of nutrients.
68. **a. Exp:** Soil of the tropical rainforest Latosols are highly leached nutrient deficient soils. They are therefore unable to regenerate as compared to the tropical deciduous forest.
69. **b. Exp:** The Himalayan Range is a confluence of the Palearctic and Oriental Zoogeographic provinces and the Boreal and Paleotropical floristic Kingdom thereby making it a region with very rich species diversity.
70. **c.**

71. **d. Exp:** Karl Marx made use of Hegel's Dialecticism in his own materialistic way to explain the progress of humanity from the ancient slave mode of production to the modern capitalist mode. This is otherwise known as the "materialistic interpretation of history".
72. **b. Exp:** Ionosphere facilitates Radio communication because of its property of reflecting electromagnetic waves but the amount of reflection decreases with an increase in frequency. So, ionosphere can reflect waves having long wavelength only. Radio waves are such waves thereby supporting the argument that ionosphere facilitates Radio Communications.
73. **b. Exp:** FDI is direct investment in productive assets, while FII is investment in financial securities. FDI can enter only in those sectors in which FDI is allowed while FII enters into the financial market which is of general nature and no specific industry or sector is involved. FII is volatile by nature, while FDI is considered more stable.
74. **a. Exp:** The Bt brinjal is a suite of transgenic brinjals (eggplant) created by inserting a crystal gene (Cry1Ac) from the soil bacterium *Bacillus thuringiensis* into the genome of various brinjal cultivars. The insertion of the gene, along with other genetic elements like promoters, terminators and an antibiotic resistance marker gene into the brinjal plant is accomplished using Agro bacterium-mediated recombination. The Bt brinjal has been developed to give resistance against *lepidopteron* insects, in particular the Brinjal Fruit and Shoot Borer (*Leucinodes orbonalis*)(FSB). Monsanto, a multinational company based in the USA, has developed the Bt brinjal in partnership with India's Maharashtra Hybrid Seeds Company (Mahyco).
75. **c. Exp:** 'Statement 2' is incorrect. The member insured must be in the age group of 18-59 years.
76. **c. Exp:** Antioxidants protect the body's cells against oxidants. Oxidation reaction can produce free radicals. These free radicals can start chain reactions which damage the cell's surface, alter its DNA or completely kill the cell. Oxidants cause oxidative stress if the body does not have time to take care of them. It can lead to diseases. A diet naturally rich in antioxidants terminates these chain reactions by removing free radicals and helps to protect the body. Fruits and vegetables are rich in antioxidants.
77. **c. Exp:** Both the statements about the Indus Civilization are true. First, the Harappans, though had their own religious beliefs as evident from archaeological evidence, did not allow religion to dominate their public life. Second, they were probably the first in the world to produce cotton.
78. **c. Exp:** Most suitable climate for paddy and jute cultivation is the humid region with high temperature throughout the year. Lower Gangetic plain is most suitable for these crops.
79. **a. Exp:** Subtropical high pressure belts facilitate the development of deserts due to the anti-cyclonic conditions. African and Eurasian desert belts are under the influence of cold ocean currents.
80. **c. Exp:** In the context of Jet aircraft, the 1st statement can be considered as true. Upliftment and subsidence is normally a phenomena of troposphere.
81. **c.**
82. **d. Exp:** Even though geotectonic disturbances can also be attributed to the reasons for a U-turn, options (a) and (b) are more appropriate in the given context.
83. **b.**
84. **b.**
85. **c. Exp:** Both the statements about the Vedic Civilization are true. First, the term "dharma" meaning law requires everyone to be dutiful and law-abiding, and in course of time developed into the "Varnashrama Dharma". Second, the term "rita" meaning cosmic order required nature and morality to function properly. The Vedic god Varuna was supposed to be the upholder of this "rita".
86. **b. Exp:** Brent Crude is the biggest of the many major classifications of crude oil consisting of Brent Crude, Brent Sweet Light Crude, Oseberg, Ekofisk, and Forties. Brent Crude is sourced from the North Sea. The Brent Crude oil marker is also known as Brent Blend, London Brent and Brent petroleum. It is used to price two thirds of the world's internationally traded crude oil supplies. Brent blend is a light crude oil, though not as light as WTI. It contains approximately 0.37% of sulphur, classifying it as sweet crude, yet again not as sweet as wti. Brent is suitable for production of gasoline and middle distillates. It is typically refined in Northwest Europe.
87. **c. Exp:** Heavy water is used both as a moderator which slows down the neutrons as well as coolant for cooling down the reactor. In India's context, where most of the nuclear reactors are pressurised heavy water reactors, option (c) is more correct.
88. **c. Exp:** As per the Constitutional provisions, the President of India nominates two members from Anglo-Indian community only to Lok Sabha.
89. **d.**
90. **d. Exp:** The purpose of the mega food parks is to provide infrastructure facilities to a number of units located at one place. The objective is to boost food processing industry in the country to reduce wastage of perishable goods and also make the country competitive in world market on the basis of quality as well as price by the use of latest technologies.
91. **b. Exp:** As per the provisions under Article 266 of Indian Constitution, no money can be withdrawn from the Consolidated Fund of India without the authorization of the Parliament.
92. **c.**
93. **d. Exp:** Microfinance that is being provided in India right now is concentrated on credit facility only, though the SHG programme of banks are also providing saving facilities with the credit facility. But the wider concept is to provide all the facilities mentioned in the options.
94. **d.**
95. **d. Exp:** Trans fat is the common name for unsaturated fat with trans-isomer (E-isomer) fatty acid(s).

Unsaturated fat is a fat molecule containing one or more double bonds between the carbon atoms. Since the carbons are double-bonded to each other, there are fewer bonds connected to hydrogen, so there are fewer hydrogen atoms, hence “unsaturated”. Cis and trans are terms that refer to the arrangement of chains of carbon atoms across the double bond. In the cis arrangement, the chains are on the same side of the double bond, resulting in a kink. In the trans arrangement, the chains are on opposite sides of the double bond, and the chain is fixed in an approximately straight shape in this region.

The process of hydrogenation adds hydrogen atoms to unsaturated fats, eliminating double bonds and making them into partially or completely saturated fats. However, partial hydrogenation, if it is chemical rather than enzymatic, converts a part of cis-isomers into trans-unsaturated fats instead of hydrogenating them completely. Trans fats also occur naturally to a limited extent: Vaccenyl and conjugated linoleyl (CLA) containing trans fats occur naturally in trace amounts in meat and dairy products from ruminants. No trans fats are essential fatty acids; indeed, the consumption of trans fats increases the risk of coronary heart disease-by raising levels of “bad” LDL cholesterol and lowering

levels of “good” HDL cholesterol. Health authorities worldwide recommend that consumption of trans fat be reduced to trace amounts. Animal based fats were once the only trans fat consumed. However, the largest amount of trans fat consumed today is created by the processed food.

- 96. d. Exp:** Adult members of all rural households are eligible for benefit under the MGNREGA, provided they are registered with the village panchayat and have job cards issued.
- 97. c. Exp:** As a part of the economic liberalization and due to the end of cold war, PV Narsimha Rao Government initiated the Look East Policy. India wants a very powerful and strong relationship with all South East Asian countries. But the established Indian position is not to interfere in the affairs of East and South East Asia especially in the issues of Taiwan or Spratly Islands or the border dispute between Thailand and Cambodia or the territorial dispute between Indonesia and Australia etc.
- 98. d**
- 99. a. Exp:** Right to vote is a Constitutional right under Article 326.
- 100. d. Exp:** As per Article-280 of the Indian Constitution, it deals primarily with the distribution of net proceeds of taxes between the Union and the States.