**Renewable energy sources (RES)**

**(BTEE-504D-18)**

1. What do you mean by energy scarcity Discuss the solutions to energy scarcity.
2. Discuss the factors affecting energy resource development.
3. Discuss the classification of energy resources.
4. Discuss the worldwide renewable energy availability.
5. Discuss the renewable energy availability and its status in India.
6. Discuss the Sun–Earth geometric relationship.
7. Discuss the applications of solar thermal energy.
8. Discuss the following terms:
9. Longitude angle
10. Latitude angle
11. Declination angle
12. Discuss the following terms:
13. Hour angle
14. Solar constant
15. Watch time
16. Solar time
17. What do you understand by solar collectors? Discuss.
18. Discuss with the help of neat sketch Flat plate type solar collectors.
19. Discuss the advantages disadvantages and applications of flat plate collectors.
20. Discuss with the help of neat sketches, various types of concentrating solar collectors.
21. Discuss the working of Brayton and Stirling Heat engine Cycles.
22. Discuss the following:
23. Solar cooker
24. Solar dryers
25. Discuss the working of solar pond.
26. Discuss the working of Solar active and passive water heating systems.
27. Discuss the construction and working of solar cells/solar PVs.
28. Draw and explain I-V characteristics of solar cells.
29. Derive the expression for efficiency of solar cells and write applications of solar cells.
30. Discuss the advantages, disadvantages of hydrogen energy.
31. Discuss the problems associated with hydrogen energy and uses of hydrogen energy.
32. Explain various hydrogen production technologies.
33. Discuss the hydrogen energy storage methods.
34. Discuss various types of wind mills with working and applications of each type.
35. Discuss with the help of neat sketch, working of various types of wind turbines.
36. Discuss the advantages, disadvantages of wind power plants.
37. Discuss the environmental impacts of wind power plants.
38. Discuss the criteria for site selection for wind power plants.
39. Discuss various types of waste and sources of waste. Also write a note on “waste is wealth”.
40. Discuss waste recovery management scheme. Also write advantages and disadvantages of waste recycling.
41. Write a note on Recycling of Plastics.
42. Discuss the classification of geothermal resources and also discuss exploration of geothermal energy.
43. Discuss various types of geothermal power plants.
44. Discuss the problems associated and environmental impacts of geothermal energy.
45. What do you mean by Biomass Gasification? Discuss the various types of Gasifiers.
46. Discuss the cooling and cleaning of Gasifiers. Also discuss the applications of Gasifiers.
47. What do you mean by Biogas energy? Discuss the composition of Biogas.
48. Discuss the term Anaerobic Digestion. Also discuss benefits of biogas.
49. Discuss various factors affecting the selection of a particular model of a Biogas plant.
50. Discuss Biogas plant feeds and their characteristics.
51. Discuss the construction and working of Tidal power plants.
52. Discuss Tidal energy resources and turbines used in Tidal power plants.
53. Discuss the advantages, disadvantages and problems faced in exploration of Tidal Energy.
54. Discuss the advantages and disadvantages of wave energy.
55. Derive the expression of power associated with sea waves.
56. Discuss various devices used for harnessing Wave energy.
57. Discuss the principle of ocean thermal energy conversion system.
58. Discuss the advantages, disadvantages and applications of Ocean thermal energy.
59. Explain the working of open cycle, closed cycle and Hybrid cycle OTEC plants
60. Discuss the working of Rankine cycle and Carnot cycle.