Dhanalakshmi Srinivasan Engineering College - Perambalur
Department of EEE

QUESTION BANK

Power Plant Engineering

UNIT-I
Thermal Power Plants

PART-A

1. State Thermodynamics law.
2. State Zeroth law of thermodynamics.
3. State the first law of Thermodynamics.
4. Define energy conservation.
5. State the second law of thermodynamics.
6. What is thermodynamic cycle?
7. State the third law of thermodynamics.
8. List the various thermodynamic Process.
9. What is meant by power plant?
10. List the factors of power plant performance.
11. What are the available energy sources for various power plants?
12. Classify the fuels or conventional energy sources.
13. What are the limitations of conventional energy sources?
14. List out the various types of conventional and non-conventional power plant.
15. What is Boiler?
16. What is the purpose of superheated steam?
17. What is the function of Economizer and its use?
18. List the challenges of Ash handling.
19. What is Crusher and its crushing method?
20. What are the types of Drafts?
21. Define Air Preheater.
22. What is meant by boiler corrosion?
23. What is Deaeration
24. What is the purpose of Deaeration?
25. What are types of Deaerators?
26. Define cooling Tower.
27. What are the types of cooling towers?
28. List the types of cooling function to condense the steam.
29. List some of the factors to be considered while choosing a site for power station.
30. List the thermal power plant in Tamilnadu.
31. What is the purpose of condenser?
32. Classify the condenser.
33. List the types of ash handling systems in thermal power plant.
34. What is coal dust?
35. What is meant by Pulverizer?
36. Define Fluidized bed combustion.
37. What is Hydraulic ash handling system?
38. What is pneumatic ash handling System?
39. What is the expansion of CFB?
40. What is circulating fluidized Bed?

PART-B

41. What is thermodynamic cycle? Explain the various types of thermodynamic cycle with relevant diagram.
42. State the Thermodynamic laws with relevant example.
43. Explain in detail about Rankine cycle.
44. What is meant by power plant? Also mention the various components of the steam power plant.

45. Explain the functioning of thermal power plant with relevant diagram.
46. Explain power plant performance and its efficiency.
47. Explain in detail about pulverized coal system.
48. What is meant by fluidized bed combustion? Explain.
49. Explain in detail about various FBC systems.
50. Write short notes about material handling in thermal power plant.
51. What is the purpose of crusher in the thermal power plant? And also explain it various types.
52. What is boiler? Explain its various types and also point out some its advantages and disadvantages.
53. Explain the condenser and cooling system of the thermal power plant.
54. What is meant by Deaeration and Deaerators? Explain in details.
55. Explain the purpose of cooling tower in the thermal power plant.
56. Compare conventional and non conventional energy sources.
57. Explain in detail about Carnot cycle.
58. List the various types of Air Heaters.
59. Explain the types of Drafts.
60. Explain in detail about Brayton cycle.

UNIT-II
Hydro Electric Power Plant.

PART-A

1. Write the formula to calculate the hydraulic power produced by a hydro turbine.
2. List any four advantages of hydro power.
3. List any four disadvantages of hydro power.
4. List the various classifications of Dams.
5. List the factors influencing the selections of site for hydro electric power plant.
6. What is surge tank?
7. What is a draft tube?
8. What are the four equipments present in a power house?
9. List the types of hydro power plants based on the availability of head.
10. List the advantages of pumped storage power plants.
11. List the advantages of impulse turbine.
12. List any four pumped storage hydro electric power plants in India.

PART-B

13. Discuss the merits and Demerits of hydraulic power station.
14. Sketch a Layout of a hydraulic power plant suitable for high head. Indicate the essential elements in that power plant and explain their function.
15. Discuss the factors to be considered in selecting the turbines for hydro electric power plant.
16. Explain the surge tank in a hydro power plant.

UNIT-III
Nuclear Power Plant.

PART-A

1. Define nuclear power plant.
2. What is meant by Radioactivity?
3. What is radioactive decay?
4. Define decay timing.
5. What is uranium enrichment?
6. What is the purpose of reprocessing of nuclear waste?
7. Define nuclear fission.
8. What is Neutron life time?
9. Define multiplication factor of a fission process.
10. What are the requirements to sustain fission process?
11. What is uranium-235 chain reaction?
12. What are four factor formulas?

13. List the four types of radiation associated with nuclear fission.
14. Define alpha radiation.
15. Define Beta radiation.
16. Define gamma radiation.
17. Define neutron radiation.
18. What is the need of Moderator in the nuclear in the nuclear reaction?
19. Define water as moderator.
20. List the various types of Nuclear reactors.
21. Name the few types of Reactors.
22. What are the advantages of breeder reactors?
23. What is PWR?
24. What is Boiler water reactor?
25. What is molten salt reactor?
26. What are the desirable properties of a good Moderator?

PART-B

27. List the most widespread power plant reactor types.
28. Explain the safety of Nuclear power plant.
29. Explain in detail about the nuclear radioactivity and its effects.
30. Derive the expression of the radioactivity decay time.
31. With relevant diagram explain the nuclear life style.
32. List out the various components of nuclear power plant and explain briefly.
33. What is the purpose of nuclear power reactor? List the types of nuclear power reactor and explain any one in details.
34. Explain the followings:
    a) Pressurized water reactor
    b) Boiling water reactor
    c) Gas-cooled, Graphite moderate reactor.
35. Comparison nuclear reactors.
36. Explain the nuclear power plants challenges and its significant problems with its safety.
37. List out the advantages and disadvantages of the nuclear power plant.
38. Explain the merits of the nuclear power plant in India.

UNIT-IV
Gas and Diesel Power Plants

PART-A

1. List the three major components of gas turbine power plant.
2. What are the working fluids in gas turbine?
3. What are the types of gas turbines?
4. List any four advantages of gas turbine.
5. List any four disadvantages of gas turbine power plants.
6. Draw the Brayton cycle to analysis gas turbine.
7. Define regenerator efficiency.
8. List the variable factors which influence the performance of gas turbine.
9. List the various types of diesel power plants.
10. List any four components of diesel power plants.
11. Discuss the various functions of fuel injection systems.
12. List the classification of oil injection system.
13. Give the reason why the cooling system is necessary for a diesel engine.
14. What are the two methods of cooling system used?
15. List any four methods adopted for circulating the water in a cooling system.
16. What are the important functions of a lubricating system?
17. List the various types of lubricating system used in diesel engine.
18. What are the starting methods of diesel engine?
19. List any four advantages of diesel power plant.
20. Give any four disadvantages of diesel power plant.
21. List any four applications of diesel power plant.

PART-B

22. With PV and TS diagram explain the effect of intercooling, reheating and regeneration in a gas turbine plant.
23. Enlist the advantages and disadvantages of diesel power plant. And discuss the essential components of the diesel power plant with neat layout.
24. Sketch the layout of a diesel engine power plant.
25. Write down the application of diesel electric power plant.
26. Discuss the working of a modern gas turbine power plant of capacity; say 30MW with an illustration or two.
27. Explain the Brayton cycle and drive an expression for the work ratio.

UNIT-V
Non-Conventional Power Generation

PART-A

1. What are the components of solar energy?
2. What is concentration ratio?
3. Classify the various types of solar energy collectors.
4. List any four applications of solar collectors.
5. Give any four important solar systems.
6. List any four advantages of solar energy.
7. List any four disadvantages of solar energy.
8. Classify the OTEC based on Location.
9. Classification of OTEC based on the cycle.
10. List any four important benefits of OTEC.
11. Give any four disadvantages of OTEC.
12. List the various components of wind energy system.
13. What are the two basic designs of turbines?
14. Write down the various types of wind power plants.
15. Give any four advantages of wind turbine.
16. List any four disadvantages of wind power generation.
17. What are the various ways of creating tidal energy?
18. List the various types of turbines used in tidal power station.
19. What are the components of tidal power station?
20. Give any four advantages of tidal power station.
21. List the limitations of tidal energy.
22. What are the main parts of geothermal power plant?
23. What are the classifications of geothermal energy conversion system?
24. What are the applications of geothermal energy?
25. What are the advantages of geothermal energy?
26. What are the disadvantages of geothermal energy?
27. What are the classifications of MHD system?
28. What are the advantages of MHD system
29. What are the disadvantages of MHD system

PART-B

30. With a neat diagram, explain the working principle of the MHD power plant.
31. Explain the spring tides and neap tides. Discuss the different tidal power schemes and configurations with neat sketches.
32. Explain the different types of geothermal energy sources.
33. Explain with a neat sketch the central receiver concept of solar energy system.
34. Describe the advantages and limitations of MHD power plant.
35. Sketch and explain the two pool tidal power plant.
36. Describe with neat sketch, the working of solar thermal receiver system plant and enumerate the advantage and disadvantage of concentrating collectors over flat collectors.