

Reg. No. :

Question Paper Code : 20869

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Third/Seventh Semester

Mechanical Engineering

ME 8792 — POWER PLANT ENGINEERING

(Common to Electrical and Electronics Engineering)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by boiler draught?
2. Write short notes on cogeneration.
3. Draw the p-V and T-s diagram of Brayton cycle.
4. List the factors which affect the performance of gas turbine power plants.
5. Define fertile materials and breeding in reactors.
6. List the various widespread power plant reactor types.
7. What is water hammer?
8. What is fuel cell?
9. Define demand factor.
10. What are the pollutants comes out from the coal fired power plant?

PART B — (5 × 13 = 65 marks)

11. (a) Explain with a neat sketch the working of a thermal electric power plant station and discuss the function of major circuits in it.

Or

- (b) (i) Describe the working of FBC boiler with a neat diagram. (6)
- (ii) Write short notes on Super critical Boiler. (7)

12. (a) Explain the essential components of the diesel power plant with neat diagram.

Or

- (b) Explain the working of open cycle and closed cycle Gas turbine power plant and discuss its advantages and disadvantages.

13. (a) Draw and explain the construction and working principle of Boiling Water Reactor.

Or

- (b) Explain CANDU reactor with a neat sketch.

14. (a) (i) Explain the construction and working of Geo thermal power plant. (8)
(ii) Discuss the different system used for generating power using geothermal energy. (5)

Or

- (b) (i) Explain the Solar thermal central receiver system. (8)
(ii) Sketch and explain the two pool/basin tidal power plant. (5)

15. (a) Explain the nuclear waste disposal methods.

Or

- (b) Write short notes on load curves and load duration curves and write the procedure for Plotting the Load Duration Curve.

PART C — (1 × 15 = 15 marks)

16. (a) Show that there is an improvement in cycle thermal efficiency by the use of regenerator in the gas turbine with circuit diagram and T-s diagram. (15)

Or

- (b) (i) Explain the factors to be considered while selecting the site of a hydro power plant. (7)
(ii) Illustrate the pumped storage plant and explain with a sketch. (8)