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Question Paper Code : 25150

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Electrical and Electronics Engineering

ME 8792 – POWER PLANT ENGINEERING

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you understand by co-generation system?
2. What are super critical boilers?
3. List the essential components of diesel power plant.
4. Mention the methods of improving a simple gas turbine cycle efficiency?
5. What are thermal reactors?
6. Why is pressurised heavy water reactor is the preferred reactor in India?
7. List the different types of hydro plants according to the quantity of water available?
8. What is solar photovoltaic cell and module?
9. Define plant use factor? How is it related to the plant capacity factor?
10. What is a load duration curve? Mention its use.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Discuss the advantages of pulverized coal firing. (6)
- (ii) List out the unique features that make circulating fluidized bed boilers more attractive than other solid fuel fired boilers. (7)

Or

- (b) (i) With a schematic mention the working principles and necessity of
(1) Condenser (2) Draught system. (4+4)
- (ii) Draw a schematic of the layout of a thermal power plant. (5)
12. (a) (i) Enumerate the applications of diesel electric power plants. (6)
- (ii) What are the functions of a fuel injection system of a diesel plant? (7)

Or

- (b) (i) Write a note on combined cycle plant and its merits. (6)
- (ii) Discuss the performance characteristics of a gas turbine plant. (7)
13. (a) (i) Explain the characteristic features of a Pressurised water reactor with a sketch. (10)
- (ii) Write any one nuclear fission reaction. (3)

Or

- (b) (i) Describe with a sketch, the main features of CANDU type reactor. (9)
- (ii) Mention some standard safety measures adopted in a nuclear power plant. (4)
14. (a) (i) Explain with a neat diagram the operation of a hydro electric power plant. What are its advantages? (9)
- (ii) List some turbines used in hydro electric power plant. (4)

Or

- (b) Discuss about the construction and working of a solar photovoltaic and solar thermal plants. (7+6)
15. (a) (i) Enlist and explain the types of power tariffs. (7)
- (ii) Compare the operating and capital cost of Thermal and Nuclear power plants. (6)

Or

- (b) (i) Draw a typical load curve. Mention its salient features. (8)
- (ii) List some commonly adopted pollution control strategies for a thermal power plant. (5)

PART C — (1 × 15 = 15 marks)

16. (a) The maximum load on a thermal power plant of 60 MW capacity is 50 MW at an annual load factor of 50%. The loads having maximum demands of 25 MW, 20 MW, 8 MW and, 5 MW are connected to the power station. Determine : (i) Average load on power station, (ii) Energy generated per year, (iii) Demand factor and (iv) Diversity factor. (15)

Or

- (b) A hydro power plant is to be used as peak load plant at an annual load factor of 30%. The average electrical energy obtained during the year is 750×10^5 kWh. Determine the maximum demand. If the plant capacity factor is 24% find reserve of the plant. (15)