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Question Paper Code : 91672

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Sixth/Seventh Semester

Mechanical Engineering

ME 2403/ME 73/ME 1353/10122 ME 704 – POWER PLANT ENGINEERING

(Regulation 2008/2010)

(Common to PTME 2403/10122 ME 704 – Power Plant Engineering for
B.E. (Part – Time) Seventh Semester – Mechanical Engineering –
Regulation 2009/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is a combined power cycle? Give examples.
2. State how the steam boilers are classified.
3. List out the four important circuits of steam power plant?
4. What is ESP? State its use.
5. What is a gas cooled nuclear reactor?
6. What do you understand by the term specific speed of a water turbine?
7. Under what circumstances will you recommend diesel power plants?
8. How does regeneration improve the thermal efficiency of gas turbine cycle?
9. What are the two types of ocean energy?
10. Define diversity factor.

PART B — (5 × 16 = 80 marks)

11. (a) (i) List out the advantages of combined power plants. (8)
(ii) Draw and discuss the layout of diesel plant. (8)
- Or
- (b) (i) Sketch and describe a Fluidised Bed Combustion (FBC) system. (8)
(ii) Explain the working of Benson boiler with a neat sketch. (8)

12. (a) (i) Describe the various types of grates used with hand fired furnaces. (8)
(ii) Enumerate the advantages of pulverised fuel firing. (8)

Or

- (b) (i) Describe the operation of a balanced draught system. (8)
(ii) Name the different types of condenser. Describe the operation of Surface condenser. (8)
13. (a) (i) Discuss the various factors to be considered while selecting the site for nuclear power station. (8)
(ii) Write short note on the Pressurised water reactor. (8)

Or

- (b) (i) What are the factors considered in selecting a prime-mover for a hydro-electric power plant? (8)
(ii) Describe the working of a low head hydro plant with a neat diagram. (8)
14. (a) Write a note on the (i) fuel system and (ii) lubrication system of diesel power plant. (16)

Or

- (b) (i) List out the advantages of gas turbine plant. (8)
(ii) Explain the constructional details and operation of combustion chamber of a gas turbine power plant. (8)
15. (a) (i) Describe the working of Claude OTEC Cycle Power Plant. (8)
(ii) Explain with a schematic - diagram the working of a dry steam geo thermal power plant. (8)

Or

- (b) (i) Write an explanatory note on the economics of power generation. (8)
(ii) A residential consumer has 10 lamps of 40 W each. His demand is
- | | |
|-------------------|-----------|
| Mid night to 5 am | – 40 W |
| 5 am to 6 pm | – no load |
| 6 pm to 7 pm | – 329 W |
| 7 pm to 9 pm | – 360 W |
| 9 pm to mid night | – 160W |
- Plot the load curve. Find average load, maximum load and demand factor. (8)