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Question Paper Code : 42284

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2010.

Sixth Semester

Mechanical Engineering

ME 1354 — POWER PLANT ENGINEERING

(Regulation 2004)

(Common to B.E. (Part-Time) Fifth Semester Mechanical Engineering
Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the factors to be considered while selecting the site for hydroelectric power plant?
2. What is meant by super critical type boilers?
3. Which type of draught system is preferred for power plant? Why?
4. What are the factors that affect cooling of water in a cooling tower?
5. List the factors which go in favour of nuclear energy?
6. Mention the purpose of surge tank in a hydro electric power plant?
7. What is the duty of the air intake system in a diesel engine power plant?
8. Indicate the requirements of a gas turbine?
9. Mention the concept of solar thermal central receiver system.
10. What is the main objective of tariff?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw the layout of a thermal power plant and explain its principle. (8)
- (ii) What are the advantages and limitations of hydel power plant? (8)

Or

- (b) (i) What are the essential features of a modern high pressure boiler?(8)
- (ii) Sketch and explain a pressurized FBC system. (8)
12. (a) (i) What are the advantages and disadvantages of central system of pulverized coal firing? (8)
- (ii) Sketch and explain the principle of any two types of stoker. (8)

Or

- (b) (i) Explain the working principle of different draught systems. (8)
- (ii) What are the advantages and disadvantages of a surface condenser? (8)
13. (a) (i) How is waste disposed from a nuclear power station? (8)
- (ii) Sketch and explain the working of boiling water reactor. (8)

Or

- (b) (i) Explain with a neat sketch the principle of turbine speed regulation. (8)
- (ii) What are the advantages and disadvantages of micro hydro power plant? (8)
14. (a) (i) What are the factors to be considered for selecting the site of a diesel engine power plant? (8)
- (ii) Explain the various components used in a diesel engine power plant. (8)

Or

- (b) (i) Describe the different fuels which can be burnt in a gas turbine plant. (8)
- (ii) Discuss the materials which are used for gas turbine. (8)
15. (a) (i) Explain the different types of geothermal sources. (8)
- (ii) What are the advantages and disadvantages of solar cell? (8)

Or

- (b) (i) What are the types of tariffs in common use? Explain the flat demand rate. (8)
- (ii) Explain the straight line method and sinking fund method of calculating the depreciation. (8)