Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 13058

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Sixth Semester

Mechanical Engineering

080120036 — POWER PLANT ENGINEERING

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Classify hydel power plants according to the quantity of water available.

2. What do you understand by once through boilers?

3. What are the uses of ash?

4. What is boiler draught?

5. What are the requirements if fission process?

6. What are critical mass and critical size of nuclear fuel?

7. List out the commonly used starting systems in large diesel engines.

8. What are the limitations of gas turbines?

9. What is the significance of load curves?

10. List the various costs which constitute the total cost of power generation.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain working of a high head hydro power plant giving its layout clearly. (8)

(ii) Discuss the advantages of combined operation of thermal and hydro power stations. (8)

Or

(b) (i) Explain the unique features of high pressure boilers. (8)

(ii) Enumerate the advantages of fluidized bed boilers over conventional boilers. (8)

12. (a) (i) Enumerate and explain the steps involved in coal handling. (8)

(ii) Explain the general layout of ash handling and dust collection systems. (8)

Or

(b) (i) Explain the methods of producing artificial draught. (8)

(ii) Explain the reasons for inefficiency in surface condensers. (8)

13. (a) (i) Enumerate and explain the essential components of a nuclear reactor. (8)

(ii) Give the functions and materials for control rod, moderator, reflector and biological shield. (8)

Or

(b) (i) Describe with the help of a neat sketch the construction and working of a PWR nuclear plant. (8)

(ii) List the advantages and disadvantages of nuclear power plant. (8)

14. (a) (i) Explain with a neat diagram, the working of a thermostatically controlled cooling system of diesel engines. (8)

(ii) Explain the wet and dry sump lubrication systems with neat sketch. (8)

Or

(b) (i) State the merits and demerits of gas turbine over I.C. engines. (8)

(ii) Explain the working of combined steam and gas turbine power plants. (8)

15. (a) (i) Define peak load, demand factor, load factor and plant use factor. (8)

(ii) Enumerate the various types of tariff and explain any two of them. (8)

Or

(b) A power station has to supply load as follows :

Time (hours)	0-6	6-12	12-14	14-18	18-24
Load (MW)	45	135	90	150	75

Draw

(i) load curve

(ii) load duration curve, and

(iii) choose suitable generating units and its operation schedule to supply the load. (16)

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