Printed Pages – 4

Roll No. .....

337675(37)

B. E. (Sixth Semester) Examination,
Nov.-Dec. 2015

(New Scheme)

(Mechanical Engg. Branch)

POWER PLANT ENGINEERING

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt any two parts from each question. All the question carry equal marks. Give diagrams/ layouts in support of your of your answer, if needed.

Unit-I

1. (a) Give a detailed comparision between the steam thermal power plant and hydro power plant. 8

(b) Sketch the layout of a modern nuclear power plant showing all the elements and all the loops. Also give brief description of its main elements.

(c) Discuss all about the elements of electric power systems. Also compare primary and secondary power distribution systems.

Unit-II

2. (a) Discuss the importance of the following in the steam power plant :

(i) Ash handling systems

(ii) Air pre-heaters

(iii) De-aevators

(iv) Steam re-heaters

(b) Give a general layout of a modern steam power plant and describe the working of the plant. 8

(c) Explain the following in respect to steam power plant : 8

(i) Steam cycle

(ii) Heat Balance in steam cycle

(iii) Heat rates

(iv) Efficiencies of power plant

Unit-III

3. (a) What are the various electric systems and equipments to be needed for smooth running and operating of a hydro-electric power plant? Discuss them briefly. 8

(b) Discuss all about of advantages and limitations of a diesel power plant. 8

(c) Explain the following terms : 8

(i) Potential power of hydro-electric power station

(ii) Catchment area for hydro-electric power plant

(iii) Bulk power of diesel engines

(iv) Efficiency of diesel power station

Unit-IV

4. (a) Explain the evolution of nuclear energy from the atoms by nuclear fission and nuclear fusion processes giving suitable examples of each. 8

(b) What are the functions of a nuclear reactor? Give the names of various types of nuclear reactors and explain the working of any one of them. 8

(c) Discuss the different cooling techniques and reactor shielding methods in brief. 8

Unit-V

5. (a) Discuss the effects of variable load on power plant design and operation. What precautions are to be taken to counter the adverse effects of variable load? 8

(b) The rated capacity of a power plant is 500 MW. The peak load on the plant is 400 MW. The different consumer groups having maximum demands of 120 MW, 100 MW, 80 MW and 95 MW, are connected to the plant. The annual load factor is 0·80. Calculate : 8

(i) The average load

(ii) The capacity factor

(iii) The energy supplied per year

(iv) The demand factor

(c) Discuss the following : (any **two**) 8

(i) Idealized load curve & realized load curve

(ii) Cost of plant and cost of production

(iii) Load operation and load dispatch