



# P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B.E. - Electrical and Electronics Engineering

Semester End Examination; May/June - 2019

## Power Plant Engineering

Time: 3 hrs

Max. Marks: 100

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

### UNIT - I

- 1 a. Explain in detail how hydroelectric power plants are classified? 10  
 b. With neat diagram, explain the general arrangement and operation of hydroelectric power plant. 10  
 2 a. With a block diagram, explain the main parts of steam power plant. 10  
 b. Explain the coal handling scheme for thermal power plant. 10

### UNIT - II

- 3 a. Explain the main components of a nuclear reactor and also mention the safety aspects to be considered in a nuclear power plant. 10  
 b. With a neat diagram, explain the working of Boiling Water Reactor (BWR) and also mention its advantages and disadvantages. 10  
 4 a. Explain the components of diesel electric station. 10  
 b. Write briefly about choice and characteristics of the diesel station. 10

### UNIT - III

- 5 a. Explain the working and main components of the wind power plant with a diagram. 10  
 b. Write briefly about bio fuel and distributed generation. 10  
 6 a. Explain the methods used to improve the thermal efficiency. 10  
 b. With a neat diagram, explain briefly about geothermal energy. Also mention its merits and demerits. 10

### UNIT - IV

- 7 a. Define the following terms :  
 i) Diversity Factor      ii) Maximum Demand      iii) Plant Capacity Factor      10  
 iv) Plant use Factor      v) Load Factor  
 b. A generating station supplies the following loads to various consumers :  
 Industrial consumer = 750 MW      Commercial establishment = 350 MW  
 Domestic power = 10 MW      Domestic light = 50 MW      10  
 If the maximum demand on the station is 1000 MW and the number of RWh generated per year is  $50 \times 10^5$ . Determine; i) The diversity factor      ii) Annual load factor  
 8 a. Explain the two ways of improving the power factor. 10  
 b. What is Tariff? Explain two part tariff and block rate tariff. 10

### UNIT - V

- 9 a. Explain the necessity of phase angle control in an interconnected station. 10  
 b. Explain Resistance and Reactance grounding. 10  
 10 a. Explain the main neutral grounding practices. 10  
 b. Write a note on Earthing Transformer. 10