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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Seventh Semester, B.E. - Electrical and Electronics Engineering
Semester End Examination; Dec. - 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. How Hydel plants are classified? Discuss briefly.   10

  b. Write short note on:

   i) Pen stock

   ii) Water Hammer and surge tank   10

   iii) Hydro electric generator

   iv) Hydro electric power station structure

2 a. With neat schematic layout, explain the working of Thermal power station.   10

  b. How coal is utilized in power station, starting from delivery to final combustion stage? 10

UNIT - II

3 a. Explain the following nuclear reactor with neat figure, advantages and disadvantages.

   i) Boiling Water Reactor   10

   ii) Pressurized Water Reactor

  b. Discuss Adverse effects at nuclear power station and nuclear waste disposal schemes.   10

4 a. Describe briefly the main components of diesel electric plant.   10

  b. Discuss choice and characteristics of diesel engine in terms of components, rating and requirements.   10

UNIT - III

5 a. Explain the working of solar power plant with a neat block diagram.   10

  b. Illustrate how Bio fuel generation can be used as co-generation plant?   10

6 a. What is co-generation? Illustrate its need and advantages and disadvantages of co-generation plants.   10

  b. Explain the working of wind turbine based power stations and state its merits and demerits.   10

UNIT - IV

7 a. Define the following terms used in power plant operation:

   i) Diversion factor

   ii) Load factor

   iii) Plant capacity factor   10

   iv) Plant use factor

b. A power station has an installed capacity of 210 MW. The capital cost of station is `1000/MW. The fixed cost is 13% of the cost of investment on full load at 100% load factor. The variable cost of the station per year is 1.3 times the fixed cost. Assume no reserve capacity find the cost of generation per kWh at load factor of 100% and 50%. Comment on the results.   10

8 a. Briefly explain Different types of Tariffs.   10

   b. A generating station supplied the following loads 1500 MW, 1200MW, 85MW, 60MW and 5MW. The station has a maximum demand of 220 MW. The annual load factor of the station is 48 percent. Calculate;

     i) The number of units supplied annually   10

     ii) Diversity factor

     iii) Demand factor

     iv) Total energy generated annually

UNIT - V

9 a. Explain the following grounding system with advantages and disadvantages:

     i) Resistance grounding   10

     ii) Reactance grounding

   b. State the effect of power factor on power system working. Also illustrate disadvantages of low power factor.   10

10 a. Explain any two power factor improvement techniques in details.   10

    b. Explain the working of Earthing transformer and Neutral grounding transformer.   10

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