



## 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; June - 2017**

**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. What are the factors to be considered in selection of site for hydro-electric power station? 4
- b. With a schematic arrangement, explain the working of hydroelectric power plant. 8
- c. Determine the maximum and average power that can be developed from the following average weekly discharge measured at a site. Also suggest the capacity of the proposed hydro power station. 8

Week	1	2	3	4	5	6	7	8	9	10	11	12	13
Q (m <sup>3</sup> /s)	200	300	1100	700	900	800	600	1000	500	400	500	700	100

Given The head is 200 m and overall efficiency of the hydraulic turbine and generator is 88%.

- 2 a. With the help of schematic layout explain the functioning of thermal power station. 10
- b. Write a note on Coal handling system in Thermal power station. 5
- c. A thermal power plant spends ` 25 lakhs in one year as coal consumption. The coal has heating value of 5000 k cal/kg and costs ` 500/ton. If the thermal efficiency is 35% and electrical efficiency is 90%, find the average load on power plant. 5

### UNIT - II

- 3 a. What are the advantages and disadvantages of nuclear power plant? 5
- b. With a schematic representation explain the working of nuclear power plant. 9
- c. Write short notes on nuclear waste disposal. 6
- 4 a. With the help of schematic diagram explain the working of diesel power plant. 10
- b. Mention the field of applications and factors to be considered in selection of diesel power plant. 10

### UNIT - III

- 5 a. With the help of block diagram explain solar PB generation system. 10
- b. With the help of block diagram explain wind energy conversion system. 10
- 6 a. Write a note on distributed generation. 10
- b. Explain mini, micro and bio fuel generation systems. 10

**UNIT - IV**

7 a. Define the terms:

- (i) Load factor
- (ii) Diversity factor
- (iii) Plant capacity factor
- (iv) Plant use factor

8

b. The power station has to supply load as follows:

11 pm -5 am → 500 kW	12 noon – 1 pm – 1500 kW
5 am – 6 am -750 kW	1 pm – 5 pm – 2500 kW
6 am-7 am-1000 kW	5 pm- 7 pm- 2000 kW
7 am – 9 am-200 kW	7 pm – 9 pm – 2500 kW
9 am – 12 noon-2500 kW	9 pm – 11 pm – 1000 kW

12

Draw the load curve, calculate the load factor. Choose the number and size of generator units to supply this load. Reliability of supply to be maintained. Find the reserve capacity of the plant required. Find the reserve capacity of the plant required. Calculate plant capacity of the plant required. Calculate plant capacity factor. Determine the operating schedule of the units in the station and hence find out the plant use factor,

8 a. What is meant by power factor? What are the bad effects of low power factor? Explain the various methods of improving it.

10

b. What is tariff? Discuss the various types of tariff.

10

**UNIT - V**

9 a. Explain the concept of load sharing and transfer of load between stations.

10

b. What is the necessity of phase angle control, explain.

10

10 a. With the help of diagram, explain the resistance grounding in detail.

10

b. What is neutral grounding? What are the advantages of neutral grounding?

10

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