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

(An Autonomous Institution affiliated to VTU, Belagavi)

**Eighth Semester, B.E. - Mechanical Engineering**

**Semester End Examination; May / June - 2019**

**Power Plant Engineering**

Time: 3 hrs

Max. Marks: 100

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

ii) Missing data, if any, may be suitably assumed.

### UNIT - I

- 1 a. With neat sketches, explain the following : 12
- i) Harnessing of tidal energy ii) Harnessing of wind energy
- b. Describe thermo electric power generator with a neat sketch. 8
- 2 a. The peak load on a power station is 35 MW. The loads having maximum demands of 15 MW, 10 MW, 5 MW and 7 MW are connected to the power station. The capacity of the power station is 40 MW and annual load factor is 50%. Find; 10
- i) Average load on the power station ii) Energy supplied per year
- iii) Demand factor iv) Diversity factor
- b. Sketch and explain the geothermal energy conversion process and list the advantages. 10

### UNIT - II

- 3 a. Sketch and explain the general arrangement of hydroelectric power plant. 10
- b. The run-off data of a river at a particular site is tabulated below :

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov.	Dec
Mean discharge in millions of m <sup>3</sup> per month	80	50	40	20	00	100	150	200	250	120	100	80

- i) Draw Hydrograph and find mean flow ii) Draw flow duration curve
- 4 a. With a neat sketch, explain the working of spreader stoker and list the advantages. 10
- b. Describe unit system of handling pulverized coal with a neat sketch and list the limitations. 10

### UNIT - III

- 5 a. With a neat diagram, explain the working of LaMont Boiler. 10
- b. Sketch and explain the working of wet cooling tower. 10
- 6 a. With a neat sketch, explain two methods of reheating. 10
- b. List the types of ash handling system. Explain the working of pneumatic ash handling system with a neat sketch. 10

### UNIT - IV

- 7 a. Sketch and label the general layout of DG plant. 10
- b. List the advantages and disadvantages of gas turbine power plant. 10

- 8 a. Describe closed cooling water system in diesel power plant with a neat sketch. 10
- b. With neat sketches, explain direct closed cycle and indirect closed cycle gas turbine. 10

**UNIT - V**

- 9 a. With the help of a neat diagram, explain the elements of a nuclear reactor. 12
- b. Write a note on;
  - i) Nuclear fusion reactions 8
  - ii) Nuclear fission reactions
- 10 a. Sketch and explain the working of Boiling water reactor. 10
- b. Discuss radiation hazards and its control. 10

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