



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

(An Autonomous Institution affiliated to VTU, Belagavi)

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

Semester End Examination; March / April - 2022

Power Plant Engineering

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: Understand the conceptual working principles of conventional source of electric power generation.

CO2: Explain the detail descriptions of hydroelectric plants, nuclear power plants and gas power plants.

CO3: Analyze the power generation using non-conventional energy sources.

CO4: Understand the concept of load curves, and different tariff.

CO5: Understand the concept of ground and power factor.

Note: I) PART - A is compulsory. Two marks for each question.

II) PART - B: Answer any Two sub questions (from a, b, c) for Maximum of 18 marks from each unit.

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
I a.	Define hydrograph and mass curve.	2	L1	CO1	PO2
b.	List any four advantages of diesel electric station.	2	L1	CO2	PO2
c.	Mention the advantages of non-conventional energy sources.	2	L1	CO3	PO2
d.	Define load factor and diversity factor.	2	L1	CO4	PO2
e.	What are the methods adopted in grounding system?	2	L1	CO5	PO2
II : PART - B		90			
UNIT - I		18			
1 a.	With a neat schematic diagram, describe the steam power station.	9	L2	CO1	PO2
b.	Classify the hydro-electric power plants according to available head and discuss them in brief.	9	L2	CO2	PO2
c.	Explain the general arrangement and operation of a hydroelectric power plant.	9	L2	CO1	PO2
UNIT - II		18			
2 a.	Explain the main parts of nuclear reactor with a neat sketch.	9	L2	CO2	PO2
b.	With a neat diagram, describe main components of diesel electric plant.	9	L2	CO2	PO2
c.	What is the classification of reactor? Explain BWR with diagram.	9	L2	CO2	PO2
UNIT - III		18			
3 a.	Describe the methods of power factor improvement.	9	L2	CO5	PO2
b.	A power station has an installed capacity of 210 MW. The capital cost of station is Rs. 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 and variable cost to be proportional to the energy produced; find the cost of generation per KWH at load factor of 100% and 50%. Comment on results.	9	L4	CO4	PO2

- c. 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

If the maximum demand on the station is 1000 MW and the number of generated per year is 50×10^5 , determine;

- i) The diversity factor
- ii) Annual load factor
- iii) Demand factor

9 L4 CO4 PO2

UNIT - IV

18

- 4 a. With a neat diagram, write a brief note on harnessing the tidal energy. 9 L2 CO3 PO2
- b. Explain the main parts of wind power plant. Mention advantages and disadvantages of wind power. 9 L2 CO3 PO2
- c. Explain briefly the various non-conventional method of power generation. 9 L3 CO3 PO2

UNIT - V

18

- 5 a. Write a short note on:
- i) Resonant grounding 9 L2 CO5 PO3
 - ii) Reactance grounding
- b. Describe the parallel operation of Inter-Connected system. 9 L2 CO5 PO3
- c. Discuss the phase angle control when the stations are interconnected. 9 L3 CO5 PO3

* * *