



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

(An Autonomous Institution affiliated to VTU, Belagavi)

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

Semester End Examination; July / Aug. - 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 grounding and power factor improvement.

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

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

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
I a.	Mention the criteria for selection of site for a thermal station.	2	L2	CO1	PO2
b.	Mention the choice and characteristics of diesel engine.	2	L1	CO2	PO2
c.	Define distributed generation.	2	L1	CO3	PO2
d.	Define diversity factor and load factor.	2	L1	CO4	PO2
e.	Mention the four different types of grounding.	2	L1	CO5	PO2
II : PART - B		90			
UNIT - I		18			
1 a.	Explain schematic layout of coal-fired power station.	9	L2	CO1	PO2
b.	What are the factors for selection of site for hydroelectric stations?	9	L2	CO1	PO2
c.	What are the functions of economizer and super heater in thermal power plant?	9	L2	CO1	PO2
UNIT - II		18			
2 a.	Explain main parts of a nuclear reactor and state their functions.	9	L2	CO2	PO2
b.	Briefly explain main components of a diesel electric plant.	9	L2	CO2	PO2
c.	Explain heavy water cooled and moderated (CANDU TYPE) reactor.	9	L2	CO2	PO2
UNIT - III		18			
3 a.	With a neat sketch of solar-water heating arrangement, briefly explain the working of solar power plant.	9	L3	CO3	PO2
b.	Explain wind energy power plant.	9	L2	CO3	PO2
c.	Write a brief note on harnessing the tidal energy with a neat diagram.	9	L2	CO3	PO2

UNIT - IV**18**

- 4 a. A base load station having a capacity of 400 MW and a standby station having a capacity of 50 MW share a common load. Find the annual load factor and capacity factor of two power stations from following data.

Annual standby stations output = 87.35×10^6 kWh

9 L2 CO4 PO2

Annual base load station output = 101.0×10^6 kWh

Peak load on standby station = 120 MW

Hours of use by standby station / year = 3000 hrs

- b. A generating station supplied the following loads; 150 MW, 120 MW, 85 MW, 60 MW and 5 MW. The station has a maximum demand of 220 MW. The annual load factor of the station is 48%. Calculate;

9 L3 CO4 PO2

i) The number of units supplied annually

ii) The diversity factor

iii) The demand factor

- c. Explain different types of tariffs.

9 L2 CO4 PO2

UNIT - V**18**

- 5 a. Explain resistance and reactance grounding.
- b. Explain voltage transform earthing along with phasor diagram.
- c. Define resonant grounding with a neat phasor diagram explain 3-phase isolated neutral system.

9 L2 CO5 PO2

9 L2 CO5 PO2

9 L2 CO5 PO2

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