U.S.N | | | | | | | | | | |

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

Contd... 2

	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 x 10^6 kWh Annual base load station output = 101.0 x 10^6 kWh Peak load on standby station = 120 MW Hours of use by standby station / year = 3000 hrs	9	L2	CO4	PO2
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; i) The number of units supplied annually ii) The diversity factor iii) The demand factor	9	L3	CO4	PO2
c.	Explain different types of tariffs.	9	L2	CO4	PO2
	UNIT - V	**18**			
5 a.	Explain resistance and reactance grounding.	9	L2	CO5	PO2
b.	Explain voltage transform earthing along with phasor diagram.	9	L2	CO5	PO2
c.	Define resonant grounding with a neat phasor diagram explain 3-phase isolated neutral system.	9	L2	CO5	PO2

* * * *