PVP 19

Code: 19ME4702A

IV B.Tech - I Semester – Regular Examinations - DECEMBER 2022

POWER PLANT ENGINEERING
(MECHANICAL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1. a)	Define energy. What are the different sources of energies?	L1	CO1
1. b)	Distinguish between open cycle and closed cycle gas turbine plants.	L2	CO2
1. c)	Summarize the advantages of fast breeder reactors.	L2	CO3
1. d)	State the importance of measurement and instrumentation in power plants.	L1	CO4
1. e)	Define demand factor and load factor.	L1	CO5

PART – B

			BL	CO	Max. Marks
		UNIT-I			
2	a)	Identify the different circuits of steam power plant and explain them with neat sketch.	L1	CO1	6 M
	b)	Describe the working of single retort stoker with neat sketch.	L1	CO1	6 M
		OR			
3	a)	State the functions of following components of thermal power plant : (i) Economizer (ii) Boiler feed pump (iii) Draught System.	L1	CO1	6 M
	b)	Write a short note on electrostatic precipitator and Air Pre-heater.	L1	CO1	6 M
		UNIT-II			
4	a)	Why the starting of diesel plant is more difficult? Explain the method used for starting diesel engine.	L2	CO2	6 M
	b)	Explain briefly the methods available to improve thermal efficiency of gas turbine plant.	L2	CO2	6 M
		OR			
5	a)	Explain the method used for super charging the engine.	L2	CO2	6 M
	b)	With a neat sketch explain the working of a simple closed cycle gas turbine. Mention its advantages and disadvantages.	L2	CO2	6 M

UNIT-III					
6	a)	Explain working of pumped storage power plant with neat sketch.	L2	CO3	6 M
	b)	Explain the principle of operation of Pressure Water Reactor with neat sketch.	L2	CO3	6 M
OR					
7	a)	Describe briefly about spillway. Why are spillways required? What are the different types of spillways?	L2	CO3	6 M
	b)	Explain the principle of operation of boiling water reactor used for power generation along with a neat sketch.	L2	CO3	6 M
UNIT-IV					
8	a)	Illustrate with schematic diagram, coordination of gas turbine plant with hydro electric plant.	L3	CO4	6 M
	b)	Sketch and explain the working of smoke measurement system.	L3	CO4	6 M
OR					
9	a)	Illustrate the working of pump storage plant in coordination with nuclear power plant.	L3	CO4	6 M
	b)	Explain the procedures for the measurement of oxygen.	L2	CO4	6 M

UNIT-V					
10	a)	A power station has a maximum demand of 15 MW, a load factor of 0.7, plant capacity factor of 0.525 and a plant use factor of 0.85. Find (i) The daily energy produced (ii) The reserve capacity of the plant (iii) The maximum energy that could be produced daily if the plant operating schedule is fully loaded when in operation	L2	CO5	8M
	b)	Discuss briefly about different types of effluents from power plants.	L2	CO5	4M
OR					
11	a)	Differentiate between fixed cost and running cost in an organization.	L2	CO5	6 M
	b)	Explain how the NOx emissions can be reduced in the flue gases?	L2	CO5	6 M