PVP 20

Code: 20ME4703C

IV B.Tech - I Semester – Regular / Supplementary Examinations
OCTOBER 2024

POWER PLANT ENGINEERING
(MECHANICAL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
		UNIT-I			
1	a)	Why the draught is required in the steam power plants? Explain the different methods to achieve the required draught.	L3	CO1	7 M
	b)	Explain the principle of operation of Steam Power Plant with the suitable layout.	L2	CO2	7 M
		OR			
2	a)	What is the mechanism adopted for the rejection of heat from the condenser of a steam power plant? Explain their importance.	L3	CO1	7 M
	b)	How to classify the coals in India based on their ash content?	L2	CO2	7 M

UNIT-II					
3	a)	Explain the working of super charging in an internal combustion engine with T-s diagrams.	L2	CO1	7 M
	b)	Explain the principle of operation of combined cycle power generation system and compare it with the stand alone power generation units.	L2	CO2	7 M
OR					
4	a)	Explain the closed cycle gas turbine used in the power plants.	L2	CO1	7 M
	b)	What are different auxiliary components required for the gas turbine power plants? Explain them with suitable applications.	L2	CO2	7 M
UNIT-III					
5	a)	What are typical ponds and storage units suitable for installation of hydro electric power plants? Explain them.	L3	CO1	7 M
	b)	What is the importance of spill ways in hydro electric power projects? Explain their practical applications.	L2	CO2	7 M
OR					
6	a)	What are different fertile materials used for nuclear power generation?	L2	CO1	7 M

	b)	Describe the principle of operation of sodium Graphite reactor used for the nuclear power generation with neat sketch.	L2	CO2	7 M
		UNIT-IV			
7	a)	Write about Coordination of hydro electric and gas turbine power stations.	L3	CO1	7 M
	b)	Discuss about coordination of hydroelectric and Nuclear power stations.	L2	CO3	7 M
		OR			
8	a)	What is the Importance of measurement and instrumentation in power plants? How water purity is measured?	L4	CO1	7 M
	b)	How Gas analysis is done in power plants? How measurement of smoke and dust are done?	L3	CO3	7 M
		UNIT-V			
9	a)	Explain Load curve and Load duration curve with a neat sketch.	L3	CO1	7 M
	b)	List out emissions from Thermal Power plant. Explain how Nox emissions can be reduced from Flue gasses.	L2	CO3	7 M
		OR			
10	a)	What is the impact on the environment and human health for the effluents released from the thermal power plants? Explain how to control them.	L3	CO1	7 M

	b)	The yearly duration curve of a certain plant can be considered as a straight line from 20 MW to 3 MW. To meet this load, three turbine generator units, two rated at 10 MW each and one at 5 MW are installed. Determine i) Installed capacity ii) Plant factor iii) Maximum demand iv) Load factor and v) Utilisation factor.	L4	CO3	7 M