PVP 20

Code: 20ME4701C

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

ALTERNATIVE SOURCES OF ENERGY
(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)	Discuss the construction and working of Liquid flat plate collector with a neat sketch.	L2	CO2	7 M
	b)	With a neat sketch, explain the working of solar pond.	L2	CO2	7 M
OR					
2	a)	How is the solar radiation data collected and what way it is helpful in solar energy conversion?	L3	CO2	7 M
	b)	Explain the various parameters that affect the performance of collector.	L2	CO2	7 M
UNIT-II					
3	a)	State and briefly explain the factors that determine the out-power form wind energy.	L2	CO3	7 M
	b)	Distinguish between Fixed and Float drum Biodigesters.	L2	CO3	7 M

		OR			
4	a)	List and briefly explain the various parts of horizontal axis wind turbine.	L2	CO3	7 M
	b)	Draw a schematic diagram of fixed dome type biogas preparation plant.	L2	CO3	7 M
		UNIT-III			
5	a)	Explain the analysis of the energy content and its extraction for a hot dry rock type Geothermal resource.	L2	CO3	7 M
	b)	Discuss single basin tidal system with a neat sketch.	L2	CO3	7 M
		OR			
6	a)	Discuss the wave energy conversion using oscillating water column with diagram.	L2	CO3	7 M
	b)	What are the advantages and limitations of wave energy conversion?	L2	CO3	7 M
		UNIT-IV			
7	a)	Describe the principle of working of a fuel cell with reference to $H_2 - O_2$ cell.	L2	CO4	7 M
	b)	Write short notes on regenerative fuel cell and list out its advantages.	L2	CO4	7 M
		OR			
8	a)	Describe the classification of fuel cell. With a neat sketch explain the working of fuel cell.	L2	CO4	7 M
	b)	Explain the performance limiting factors of fuel cell.	L2	CO4	7 M

UNIT-V					
9	a)	Discuss direct energy conversion methods.	L2	CO4	7 M
	b)	Explain the construction and working of MHD generator with neat sketch.	L2	CO4	7 M
OR					
10	a)	Write short notes on the following: (i) Criterion for selection of material for thermo electric generators (ii) Seebeck Effect.	L2	CO4	6 M
	b)	Explain liquid metal system of MHD power generation with neat schematic.	L2	CO4	8 M