U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 22CH7OEAET **Max Marks: 100**
Course: Advances in Energy Technology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	*CO*	*PO*	Marks
1	a)		Explain how energy consumption has evolved throughout human history and analyze its impact on modern society.	*CO1*	*PO2*	**10**
	b)		Evaluate how renewable energy sources can reduce dependency on fossil fuels and mitigate environmental concerns.	*CO2*	*PO7*	**10**
			OR			
2	a)		Compare various energy alternatives, their potential benefits, and the challenges in implementation, with a focus on the Indian context.	*CO3*	*PO2*	**10**
	b)		Analyze the current state of global fossil fuel reserves and production trends.	*CO4*	*PO6*	**10**
			UNIT - II			
3	a)		Summarize the concept of extra-terrestrial solar radiation and analyze the factors affecting solar radiation at ground level. Use suitable diagrams to illustrate your answer.	*CO3*	*PO2*	**10**
	b)		Describe the working principle of flat-plate solar collectors with neat sketch. Compare their advantages compared to concentrating types of solar collectors.	*CO3*	*PO2*	**10**
			OR			
4	a)		Elucidate the construction, working of photovoltaic solar cells with suitable diagram.	*CO 5*	*PO 3*	**10**
	b)		Evaluate the various applications of solar energy in daily life and industrial processes.	*CO 6*	*PO 2*	**10**
			UNIT - III			
5	a)		Explain the construction and working of updraft gasifier with the help of a labelled diagram.	*CO 5*	*PO 3*	**10**
	b)		With a neat labelled diagram, explain the construction and working of biogas plant.	*CO 5*	*PO 3*	**10**

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			OR			
	6	a)	Explain the construction and working of downdraft gasifier with the help of a labelled diagram.	*CO 5*	*PO 3*	**10**
		b)	Illustrate the working principle of dry steam geothermal power plant with the help of a neat sketch.	*CO 6*	*PO 2*	**10**
			UNIT - IV			
	7	a)	Explain the working of a horizontal wind-axis turbine along with a diagram.	*CO 5*	*PO 3*	**10**
		b)	What is Darrieus turbine? Explain its working principle and its applications.	*CO 5*	*PO 3*	**10**
			OR			
	8	a)	Discuss the criteria for site selection in the development of a hydropower project.	*CO 4*	*PO 6*	**10**
		b)	Hydrothermal plant has gained importance for energy generation compared to other forms of renewable energy. Justify the statement.	*CO 5*	*PO 3*	**10**
			UNIT - V			
	9	a)	Explain the working principle of fuel cells with a labeled diagram and. Discuss the advantages of using fuel cells as a source of energy.	*CO 5*	*PO 3*	**10**
		b)	Elucidate the working principle of a molten carbonate fuel cell along with neat diagram.	*CO 5*	*PO 3*	**10**
			OR			
	10	a)	Classify fuel cells based on the type of electrolyte used and operating conditions. Provide examples for each type.	*CO 5*	*PO 3*	**10**
		b)	Enlist and explain the potential applications of fuel cells in transportation, stationary power generation, and portable devices.	*CO 6*	*PO 2*	**10**

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