

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)*

UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026

*Fifth Semester**Mechanical Engineering***CME365 - RENEWABLE ENERGY TECHNOLOGIES**

(Common to Seventh Semester Computer Science and Engineering,
Electrical and Electronics Engineering, Information Technology &
Artificial Intelligence and Data Science)

*Regulations - 2021**Duration : 3 Hrs**Maximum : 100 Marks***PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

<i>Q.No</i>	<i>Questions</i>	<i>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	Outline the global availability of conventional energy sources.	L2	1	2
2.	Define energy efficiency.	L1	1	2
3.	Define collector efficiency.	L1	2	2
4.	How would you classify the types of PV systems?	L2	2	2
5.	How would you compare horizontal-axis and vertical-axis wind turbines?	L2	3	2
6.	Can you define tip speed ratio?	L1	3	2
7.	What are the different forms of biomass available as a biofuel?	L1	4	2
8.	Can you list the factors that impact the generation of biogas?	L1	4	2
9.	What would be your summary of the specific issues faced when constructing barriers for a tidal scheme?	L2	5	2
10.	What is the overall efficiency of an OTEC power plant?	L2	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Can you summarize the present status of the Indian and international energy scenario for conventional and renewable energy sources?	L2	1	16
	Or			
	b i Can you explain the energy planning challenges in bridging the gap between energy demand and supply in India?	L2	1	10
	ii Can you outline the limitations of Renewable Energy (RE) sources?	L2	1	6
12.	a How would you classify the types of solar energy collectors? Explain each type with neat diagrams.	L2	2	16
	Or			
	b i Can you explain the working of solar pyranometer for measuring global radiation?	L2	2	8
	ii How would you interpret the mechanism of photoconduction in a PV cell?	L2	2	8

13.	a	i	What approach would you use to derive the Betz limit for power generation in a wind turbine?	L3	3	10
		ii	What factors would you consider in the site selection of a wind energy system?	L3	3	6
Or						
	b	i	How can energy from wind be extracted? Explain the process with a suitable diagram.	L3	3	10
		ii	How would you apply your understanding to analyze the grid integration issues of wind power plants?	L3	3	6
14.	a	i	Can you describe the working of a fixed-dome type biogas plant with a neat diagram?	L2	4	8
		ii	What do you understand by the pyrolysis process of biomass digestion?	L2	4	8
	Or					
	b		Can you illustrate the process of biodiesel and ethanol production along with their suitable applications?	L2	4	16
15.	a	i	Can you analyze the operation of a double-basin type tidal power plant by identifying each component and explaining its function and interrelationships?	L4	5	8
		ii	Can you examine the concept of geothermal energy conversion and analyze how the various processes contribute to overall energy efficiency?	L4	5	8
	Or					
	b		How would you classify the types of OTEC plants, and analyze the characteristics and working of each type in detail?	L4	5	16