

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Sixth Semester

Biomedical Engineering

OEE351 - Renewable Energy System

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>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Compare renewable and non renewable energy sources.	UN	1	2
2.	State the limitations of renewable energy sources.	RE	1	2
3.	Write the principle of solar thermal energy conversion.	UN	2	2
4.	Name the types of solar cells used in solar renewable energy.	RE	2	2
5.	List the main components of wind energy conversion systems.	RE	3	2
6.	Differentiate fixed speed and variable speed wind turbines.	UN	3	2
7.	Define the term anaerobic digestion in biogas generation.	RE	4	2
8.	Write the significance of thermal gasification in biomass energy production.	UN	4	2
9.	Specify the resources of geothermal energy.	RE	5	2
10.	Mention the advantages of using hydrogen as an energy source.	UN	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Discuss the various renewable energy resources available in India and their potential for future power production. Or	AP	1	13
	b Explain the usage of renewable energy in India and its future prospects in terms of power generation.	AP	1	13
12.	a Explain the working and characteristics of flat plate solar collectors and concentrating solar collectors with suitable sketch. Or	AN	2	13
	b Describe the process of direct electricity generation using photovoltaic systems in detail with neat sketch.	AN	2	13
13.	a Describe the principle of wind energy and explain the factors affecting wind energy in detail. Or	AP	3	13
	b Describe the wind energy conversion systems in detail with their control systems.	AP	3	13

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| 14. | a | Discuss the biomass energy conversion technologies with their characteristics in detail with neat block diagram. | AN | 4 | 13 |
| | | Or | | | |
| | b | With neat sketch describe the working of biogas plants with their advantages and disadvantages. | AN | 4 | 13 |
| 15. | a | Explain the working principle of hydrogen energy and fuel cells in detail. | AP | 5 | 13 |
| | | Or | | | |
| | b | Explain the principle of ocean thermal energy conversion with their applications in detail. | AP | 5 | 13 |

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Discuss the recent advancements in photovoltaic applications as building integrated PV and grid connected PV systems.	AN	2	15
		Or			
	b	Discuss the economic and environmental benefits of using biomass and biogas energy in power generation sector.	AN	4	15