

Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Seventh Semester

Agriculture Engineering

AI3702– Renewable Energy in Agricultural Engineering

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.	State the significance of bioresources in energy production.	L1	1	2
2.	List the major types of biomass conversion technologies.	L1	1	2
3.	Recall the slurry handling in bioenergy systems.	L1	2	2
4.	List the factors affecting biogas enrichment and utilization.	L1	2	2
5.	Define bioreactor and list its types.	L2	3	2
6.	Explain the role of downstream processing in bioproduct recovery.	L2	3	2
7.	Differentiate between acid and enzymatic hydrolysis.	L2	4	2
8.	List the types of gasifiers used in biomass conversion.	L1	4	2
9.	Define cogeneration and its role in sustainable energy.	L1	5	2
10.	Choose any two impact of bioenergy on the environment.	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 Describe the process of biogas production and the parameters affecting gas yield.	L2	1	16
	Or			
	b Explain the construction and operation of fixed-dome biogas plant.	L2	1	16
12.	a Discuss the methods of slurry handling and its importance in bioenergy systems.	L2	2	16
	Or			
	b Explain the functioning of biogas appliances and their efficiency.	L2	2	16
13.	a Draw and explain the working principles of continuous stirred tank reactors (CSTR) with neat diagram.	L3	3	16
	Or			
	b Apply the concept of biological wastewater treatment to design an activated sludge system.	L3	3	16

14.	a	Explain the process of alcohol production through enzyme hydrolysis.	L3	4	16
	Or				
	b	Compare combustion, pyrolysis, and gasification processes with examples.	L3	4	16
15.	a	Analyze the environmental impacts of bioenergy systems and propose mitigation measures.	L4	5	16
	Or				
	b	Design an innovative model for biomass-based cogeneration in rural areas.	L4	5	16