Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

Seventh Semester

Agricultural Engineering

AI3702 - Renewable Energy in Agricultural Engineering

Regulations - 2021

Duration : 3 Hrs ***Maximum : 100 Marks***

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Define biomass and give two examples.	L1	1	2
2.	Name any two parameters that affect biogas production.	L1	1	2
3.	List out the function of biogas appliances.	L1	2	2
4.	What are bioenergetics?	L1	2	2
5.	Compare batch and continuous stirred tank reactors.	L2	3	2
6.	Explain the activated sludge process.	L2	3	2
7.	Define acid hydrolysis and its significance in alcohol production.	L1	4	2
8.	Recall the term ‘pyrolysis.’	L2	4	2
9.	What is biomass briquetting?	L1	5	2
10.	How does co-generation impact the environment?	L1	5	2

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

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a	Demonstrate the types and characteristics of different biomass resources.	L2	1	16
		Or			
	b	Compare various types of biogas plants with a focus on construction and maintenance.	L2	1	16
12.	a	Critically assess the methods used for enriching biogas slurry for agricultural applications, discussing the advantages and potential challenges of each method.	L3	2	16
		Or			
	b	Apply the kinetic principles involved in product formation in bioenergy systems to a specific case study, illustrating how these principles influence the efficiency of the bioprocess.	L3	2	16

13.	a	Analyze the design and working principles of a continuous stirred tank reactor, discussing its advantages and limitations in bioenergy applications.	L4	3	16
		Or			
	b	Differentiate and analyze the key downstream processing steps involved in the recovery and purification of products in bioreactors and highlighting their importance in bioenergy production.	L4	3	16
14.	a	Demonstrate the methods used for alcohol production from biomass and illustrate their steps and applications in bioenergy production.	L3	4	16
		Or			
	b	Apply the principles of thermochemical conversion to explain how combustion and gasification processes are utilized in bioenergy production.	L3	4	16
15.	a	What are energy plantations? Discuss their role in renewable energy production.	L2	5	16
		Or			
	b	Explain the impact of bioenergy on the environment and describe how bioenergy policies affect this impact.	L2	5	16