

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

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

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)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	List few resources for biomass.	RE	1	2
2.	Define the concept of biodegradation.	RE	1	2
3.	Summarize the desirable characteristics of bio gas appliances.	UN	2	2
4.	Describe the significance of biocatalysts in the biogas production.	UN	2	2
5.	Define the theoretical retention time of bioreactor.	RE	3	2
6.	Infer why activated sludge process is mostly used in waste water treatment.	UN	3	2
7.	List few applications of ethanol.	RE	4	2
8.	Describe how pyrolysis is different from gasification.	UN	4	2
9.	What are the chemical agents used in the chemical conversion of biomass.	RE	5	2
10.	Define briquetting.	RE	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 List the various types of biomass and analyze their vital characteristics which influence the biomass conversion process.	AN	1	13
	Or			
	b Analyze the different factors affecting the biogas production and given your comments for controlling the factors which may reduce the biogas production.	AN	1	13
12.	a Explain how the slurry obtained during production of biogas can be handled effectively and also describe the enrichment and utilization of the products in an effective manner.	UN	2	13
	Or			
	b i Briefly explain the biochemical characteristics of bioresources.	UN	2	7
	ii Explain the kinetics of biogas production from goat's dung.	UN	2	6

13.	a	Develop a suitable bioreactor to treat wastewater contaminated with hydrocarbons with its specific features and advantages.	AP	3	13
Or					
	b	Develop a system to recover and purify the waste water by biological waste water treatment.	AP	3	13
14.	a	Construct a suitable methodology to produce bio ethanol from corn. Utilize the waste from the process for proper applications.	AP	4	13
Or					
	b	Develop a process to convert biomass into energy or other products by the application of heat and compare it with the same process carried out by chemical conversion.	AP	4	13
15.	a	Explain how a conventional wood burning stove can be improved for its better performance and discuss the performance parameters of the improved stove.	UN	5	13
Or					
	b i	Discuss the concept of co-generation with a suitable example.	UN	5	8
	ii	Explain the bioenergy policy.	UN	5	5

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Build a Deenbandhu biogas plant for biogas production and analyze the factors to be considered for the selection of the particular plant and design.	AN	1	15
Or					
	b	Develop a fluidized bed gasifier for biomass conversion and examine how it is superior than other gasifiers.	AN	4	15