

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

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

Sixth Semester

Chemical Engineering

CH3006 – Bioenergy

Regulations - 2021

Duration : 3 Hrs

**Maximum: 100
Marks**

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

Q.No	Questions	BLT	CO	Marks
1.	Name the three main types biomass materials from which bioenergy feedstocks are derived.	L1	1	2
2.	What are the steps involved during the size reduction process?	L2	1	2
3.	Name the two types of Anaerobic digestion system.	L1	2	2
4.	What are the methods are available for purification of biogas?	L1	2	2
5.	What do you mean by pyrolysis?	L2	3	2
6.	Name the different biomass feedstocks used for the production of biodiesel.	L1	3	2
7.	Compare updraft gasifier with downdraft gasifier.	L2	4	2
8.	List out the safety aspects to be followed while using fluidized bed gasifier.	L1	4	2
9.	What do you mean by cogeneration system?	L2	5	2
10.	Name some biomass feedstocks which are used for cogeneration in industries.	L1	5	2

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

Q.No	Questions	BLT	CO	Marks
11. a	Explain briefly about the various biomass sources and their classification indicating their characteristics along with their preparation.	L2	1	16
	Or			
b	Explain in detail about the Drying, Storage and Handling of biomass.	L2	1	16
12. a	Explain the various steps involved in biogas production and list out the factors affecting the same.	L4	2	16

Or

	b	Explain in detail about the digestors for rural application and the High rate digestors for industrial waste water treatment.	L4	2	16
13.	a	With a neat flow sheet, describe about the thermos-chemical biomass conversion process and mention its salient features.	L4	3	16
		Or			
	b	Explain in detail about the incineration process for safe disposal method of hazardous waste and also indicate its advantages and disadvantages.	L4	3	16
14.	a	Explain briefly about the effect of temperature and pressure on gasification of biomass.	L5	4	10
		Write a brief note on Fixed bed gasifier.	L4	4	6
		Or			
	b	Explain with a neat sketch, the working principle of circulating fluidized bed gasifier.	L4	4	16
15.	a	Explain in detail about the combustion of biomass and its utilization for cogeneration systems in industries.	L2	5	16
		Or			
	b	With a suitable case study explain in detail about the use of bagasse for cogeneration.	L2	5	16