

Reg.No. _____



Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 14ME2052
Sub. Name : Biomass Energy Systems

Semester : VII
Duration : 3hrs
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Explain the various biomass resources in detail.	CO1	8
	b.	Describe the various thermo-chemical conversion processes?	CO3	8
	c.	Distinguish between air and steam gasification processes.	CO2	4
(OR)				
2.	a.	Explain the biochemical processes in detail?	CO3	8
	b.	Distinguish between anaerobic digestion and fermentation processes.	CO3	4
	c.	Explain the working principle of a cross draft gasifier with a sketch?	CO2	8
3.	a.	Describe the method of ethanol production from wood?	CO3	8
	b.	What is fluidized bed gasifier? Explain.	CO3	8
	c.	Distinguish between slow pyrolysis and fast pyrolysis processes.	CO3	4
(OR)				
4.	a.	Describe the method of methanol production from biomass waste?	CO3	8
	b.	Explain the working principle of a floating drum type biogas plant?	CO3	8
	c.	What are the advantages and disadvantages of fixed dome type biogas plant?	CO2	4
5.	a.	What are the factors affecting the biogas yield? Explain.	CO3	8
	b.	Explain the types of fluidization with sketches?	CO2	8
	c.	Explain the effect of additives on biogas yields?	CO3	4
(OR)				
6.	a.	Explain the performance of biogas in CI engine?	CO3	8
	b.	How syn gas is produced? Explain.	CO2	4
	c.	Explain the performance of wood gas in CI engine?	CO3	8
7.	a.	Write a brief note on design of biogas digester based on end user requirements?	CO3	8
	b.	What is digester sizing? Explain.	CO3	4
	c.	Explain the method of biogas purification with a sketch?	CO2	8
(OR)				
8.	a.	What is scaling of biogas plants? Explain.	CO2	8
	b.	Write a brief note on design of biogas digester based on methane production rate?	CO3	8
	c.	What is hydraulic retention time? Explain.	CO1	4
<u>Compulsory:</u>				
9.	a.	What are the benefits of biomass energy?	CO3	4
	b.	What are the applications of biogas? Explain.	CO3	8
	c.	Describe the world biomass energy consumption pattern?	CO3	8

ALL THE BEST