


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, Dec 2023			
Programme Name: M Tech (REE.)		Semester : I	
Course Name : Biomass Processing Technologies		Time : 03 hrs.	
Course Code : EPEC7070		Max. Marks: 100	
Nos. of page(s) : 01			
Instructions: Go through the questions carefully and assume suitable data, if necessary.			
SECTION A (5Qx4M=20Marks)			
S. No.	Questions	Marks	CO
Q1	Mention major feedstock categories for biomass-based energy productions with examples?	4	CO1
Q2	How is enzymatic pre-treatment different from alkali-based pre-treatment methods?	4	CO2
Q3	Distinguish between Biomass pyrolysis and biomass gasification?	4	CO2
Q4	Provide detailed steps for conversion of biomass to bioethanol?	4	CO2
Q5	What do you mean by Hydrolysis? Explain with examples?	4	CO1
SECTION B (4Qx10M=40Marks)			
Q6	Explain the structural and functional composition of Lignocellulosic biomass? What are the ways of analyzing these components?	10	CO3
Q7	Provide bioconversion technology suitable for conversion of herbaceous biomass with a higher starch content to bioenergy? Explain the process in detail?	10	CO4
Q8	Explain Fischer-Trposch synthesis? Provide a schematic with various reactor configuration and associated chemical reactions involved in Fischer-Trposch process?	10	CO3
Q9.	Describe transesterification and its various types supported by suitable examples?	10	CO3
SECTION C (2Qx20M=40Marks)			
Q10.	What do you mean by Biorefinery? Describe integrated biorefinery with suitable schematics, process conditions and examples for either a) Lignocellulosic biomass or b) Municipal waste?	20	CO4
Q11	Explain the process of Gasification with suitable chemical reactions and schematics? State whether these processes are efficient as compared to Fischer-Trposch processes? Substantiate with reasons? Are gasifiers suitable as technologies to be deployed at rural areas? Provide the advantages and disadvantages of the technology and its implementation in India?	20	CO5