


Name:			
Enrolment No:			
UPES End Semester Examination, December 2023			
Course: Biomass Conversion Technology Program: B. Tech Renewable and Sustainable Engineering Course Code: EPEG 3029		Semester : 5th Time : 03 hrs. Max. Marks: 100	
Instructions:			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	What area of forest is needed to offset the CO ₂ emissions from a power station or from running a car?	4	CO1
Q 2	What types of trees and crops are best as carbon sinks or for bioenergy and wood production?	4	CO1
Q 3	Detail the application of pyrolysis char in the construction of roadways and building materials.	4	CO1
Q 4	How does management of land as a carbon sink or for bioenergy production affect biodiversity and other environmental characteristics?	4	CO1
Q 5	Explain thermochemical methods and their applications	4	CO2
SECTION B (4Qx10M= 40 Marks)			
Q 6	Discuss the concept of biomass gasification. Compare biomass gasification to traditional combustion methods in terms of efficiency and emissions.	10	CO2
Q 7	Identify and discuss the major technical and economic challenges associated with biomass conversion technologies.	10	CO2
Q 8	Explain the importance of Biomass Briquetting and Pelletization. Also discuss the effects of Feed and operational parameters on it.	10	CO3
Q 9	Enumerate the properties of output gases (mainly producer gas). Explain the industrial application of gasifier.	10	CO3
SECTION-C (2Qx20M=40 Marks)			
Q 10	Analyze how implementation of composting and vermicomposting contributed to biomass productivity, energy plantation, and power programs in a specific case study?	10+10	CO4
Q 11	Evaluate the distinctive characteristics of briquettes, such as their high energy density and storage convenience, position them as an eco-friendly	20	CO4

	<p>alternative in the renewable energy landscape, and in what industries is their usage particularly prevalent?</p> <p>Elaborate on the pyrolysis process, including its various types, resulting products like biochar and syngas, and the diverse range of applications it encompasses?</p> <p>Are there any case studies that exemplify the successful application of pyrolysis in converting agricultural waste into biochar for soil enhancement, underscoring its practical benefits and versatility?</p> <p style="text-align: center;">Or,</p> <p>Explore the successful implementation of a biogas installation project aimed at harnessing energy from organic waste. The initiative focuses on sustainable waste management and energy production to address environmental concerns and provide a renewable energy source for a community. Provide a case study on the Transforming Organic Waste into Energy: A Case Study on Biogas Installation.</p>		
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