

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

B.Tech.-VI Semester (BT)

COURSE CODE (CREDITS): 18B1WBT634 (03)

MAX. MARKS: 35

COURSE NAME: Bioenergy and Biofuels

COURSE INSTRUCTOR: Prof. Sudhir Kumar

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make suitable numeric assumptions wherever required for solving problem.

Q.No.	Question	CO	Marks
Q1	Differentiate among the following by giving suitable examples: i) Gasification, Combustion, and Pyrolysis ii) Depict the chemistry of gasification process with suitable reactions and their nature.	IV	3+2
Q2	a) Are biofuels CO ₂ neutral? Support your answer with suitable justifications. b) Why are not more farmers interested in collecting agricultural residues or growing energy-crops to make biofuels?	II	2.5+2.5
Q3	a) Elucidate conditions and applications of Liquefaction Process of gases? b) Why would India want to use its biomass resources for fuels and products?	V	3+2
Q4	a) Differentiate between synthesis process and applications of Biodiesel and Biomethane?	V	5
Q5	a) If wet biomass of one sample of energy crop plant is 01 kg. How will you calculate the total dry biomass of field of 500 m ² ? You may assume necessary assumptions by giving reasons. b) Design a schematic diagram of the concept of Biomass Gasification Combined Cycle (BGCC)?	IV	2.5+2.5
Q6	Mention the key trends and innovations shaping the future of the Waste Conversion Industry?	III	5
Q7	Compare pros and cons of fossil fuels to biofuels. What would be the path leading to sustainable biofuels program of India?	1	5