JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech.- VI Semester (Biotechnology)

COURSE CODE (CREDITS): 18B1WBT634 (03) MAX. MARKS: 15

COURSE NAME: Bioenergy and Biofuels

COURSE INSTRUCTOR: Prof. Sudhir Kumar MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

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

Q.No	Question	CO	Marks
Q1	a. Biomass based energy sources follow carbon neutral cycle. Justify this statement giving logical reasoning. b. Assess the factors that are taken into consideration for suitability determination and choice of biomass for biofuel program.	I	1.5 each
Q2	Defend the statements with suitable reasoning – a. "Net Energy Value (NEV) is a matter of concern in biofuels and bioenergy sector." b. "Biofuels give political independence and regional economic benefits."	I	1.5 each
Q3	a. 576 g of glucose is fermented to ethanol; what is the maximum theoretical percentage production of ethanol under ideal conditions? Calculate and show your work. b. 2.7% oxygen requirement pushes the required level of ethanol in gasoline to 7.76 wt% as a minimum. Justify that why this is so?	II	1.5 each
Q4	a. Devise at least two methods to separate microalgae growing in 100 ml of algal culture media. b. Differentiate between first and second generation biofuels.	II	1.5 each
Q5	a. Summarize the principle modifications required to convert vegetable oils to biodiesel. b. Differentiate between Grain ethanol and Cellulosic ethanol in terms of substrate and feasibility of industrial production.	II	1.5 each