JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech.- VI Semester (Biotechnology)

COURSE CODE (CREDITS): 18B11BT611 (04) MAX. MARKS: 15

COURSE NAME: Downstream Processing

COURSE INSTRUCTORS: Dr. Saurabh Bansal 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	What is Downstream processing? What is its importance in the manufacturing of any bioproducts?	CO-1	2
Q2 a)	If the efficiencies of separation in the three downstream steps are 96%, 95%, and 95%, how much of the product is lost overall?"	CO-1	1
Q2 b)	If the same product is recovered using a modified downstream processing method, which involves two steps with efficiencies of 96% and 95% respectively, will the yield of the product be higher than the earlier designed downstream processing method as mentioned in Q2a?	CO-1	2
Q3 a)	Why minimal numbers of passes of the cells passed through the homogeniser should be preferred?	CO-2	1
Q3 b)	Why cell lysis using organic solvents is preferred over the detergent?	CO-2	1
Q3 c)	Differentiate between the downstream processing of intracellular and extracellular products?	CO-2	2
Q4 a)	Solids A and B have compressibility factor of 0.5 and 0.8 respectively but the ease of filtration is the same in both the cases at the same pressure. If the pressure of filtration is doubled which one will filter faster?	CO-3	1
Q4 b)	What factors influence the separation efficiency in centrifugation?	CO-3	2
Q5	What is the difference between depth filtration and surface filtration?	CO-3	1
Q6	Estimate the feed flow rate at which small food particles (10^{-2} mm diameter, 1.03 g/cm^3 density) are just removed from a liquid (1.00 g/cm^3 density, 1.25 mPa·s viscosity) using a tubular-bowl centrifuge (70 cm length, 11.5 cm radius) operated at 10,000 rpm.	CO-4	2