

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-VIIIth Semester (BT)

COURSE CODE: 21B1WBT832

MAX. MARKS: 25

COURSE NAME: Bioprocess Modelling and Simulation

COURSE CREDITS: 03

MAX. TIME: 1 Hour 30 Min

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

- Q1. What are the different steps in execution of a bioprocess design? Summarize the things need to know before going to any process modeling and simulation? (CO III) (5 M)
- Q2. What are the different components information needs to consider in estimation of Total Plant Direct Cost (TPDC)? How will you calculate the Direct Fixed Capital (DFC) if you know the TPDC value? Under economy of scale, what is the equation used for calculating the six-tenth factor? (CO II) (5 M)
- Q3. What are the main factors need to consider while doing the uncertainty analysis of BPD? What are the different uncertain variables & objective functions have to be considering while going for uncertainty analysis through monte-carlo simulation? (CO III) (5 M)
- Q4. What skills are needed for performing the process modeling? With a neat flowchart summarize the strategy used for simulation and modeling building of BPD? (CO II) (5 M)
- Q5. Discuss in detail about the modeling and simulation approaches utilization advantages in a bioprocess system by emphasizing how the developed model will help further in bioprocess development? Mention the different available process simulators for bioprocess applications? (CO I & CO II) (5 M)

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