

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- FEB-2023

COURSE CODE (CREDITS): 21B1WBT832 (03)

MAX. MARKS: 15

COURSE NAME: Bioprocess Modelling and Simulation

COURSE INSTRUCTORS: Dr. Garlapati Vijay Kumar

MAX. TIME: 1 Hour

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

1. If you want to calculate the "capital investment" of any bioprocess project what are the main items need to be considered? What do you know about the "0.6 rule" and explain its necessity in bioprocess economics? **(CO I) (3 M)**
2. How will you get the information about the "Purchase Equipment Cost" as a part of Bioprocess economics? If you know the "Purchase Equipment Cost", how you will deduct the different items of under "capital investment" of bioprocess project? Write the equations used for calculating the "Return on Investment" and "Payback time (In years)"? **(CO I) (3 M)**
3. Depict the different phases need to consider while developing any fermentation process? What are the advantages & disadvantages of using "Filamentous Fungi" as a host for recombinant products? **(CO II) (3 M)**
4. How "High Performance bioreactors" differ with the "Lab-scale Bioreactors"? Mention the advantages & disadvantages of using capacitance-based in-situ biomass sensors? **(CO II) (3 M)**
5. How intracellular variables estimation differs with the extracellular variables estimation as a part of bioprocess monitoring? Write about the different coefficients used for controlling the metabolic flux as a part of metabolite optimization and write the theorems utilized to relate these coefficients? **(CO I & CO II) (3 M)**

@@@@@@@@@@@@@@@@@@@@ ALL THE BEST @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@