JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKE-UP EXAMINATION- 2025

M.Sc. (Biotechnology) - I Semester

COURSE CODE (CREDITS): 20MS1BT114 (2) MAX. MARKS: 25

COURSE NAME: MICROBIOLOGY

COURSE INSTRUCTORS: Dr. Rahul Shrivastava MAX. TIME: 1 Hour 30 min

Note: (a) All questions are compulsory. (b) Calculators are NOT ALLOWED

Q. No.	Question	Marks
Q1.	A culture has initially 1.0×10^4 bacterial cells in 200 mL of media. The bacteria has a generation time of 20 minutes. The culture was incubated for 60 minutes. Calculate: a) How many generations occurred during the incubation period? b) What is the final concentration (cells/mL) c) If you plate 0.10 mL of the culture (no dilution) on an agar plate, how many colonies do you expect?	**[1+2+2 = 5]**
Q2.	Correct the following **Wrong Statements** and Give reasons for your answer: a. Optical Density measurements provide accurate count of viable cells in an inoculum. b. 'Pour plate technique' can be used for counting the number of microbes in a biological sample. c. Packaged spices, meat, microbiological plastic ware and medical supplies are sterilized by X-rays. d. Acidic food is more prone to be spoiled by bacteria than fungi.	**[1.5 X 4=6]**
Q3.	***Case Study:*** You are provided with water and soil samples from Ladakh region with unknown bacterial population in it. Design an experiment to culture the unknown bacteria present in the samples, and then to study its nutritional requirements.	**[4]**
Q4.	Discuss important contributions made by Louis Pasteur, which led to the development of Industrial Microbiology.	**[4]**
Q5.	Elaborate the physical and chemical microbial control methods, along with their mechanism of action used to maintain aseptic conditions inside a Laminar Air Floor (LAF) and a Culture Room for prevention of contamination of the cultures.	**[6]**