JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2025

B. Tech.-IV Semester (Biotechnology)

COURSE CODE (CREDITS): 18B11BT414 (03)   MAX. MARKS: 25

COURSE NAME: Microbiology

COURSE INSTRUCTORS: Ashok Kumar Nadda   MAX. TIME: 1.5 Hours

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required

for solving problems

Q.No	Question	COs	Marks
	Section I		
Q1	(a) How does moist heat differ from dry heat in microbial control?	CO II	1
	(b) How does horizontal gene transfer contribute to antibiotic resistance?	COII	1
	(c) What are Hfr plasmids? How do these produced during gene transfer in bacteria.	COIII	1
	(d) Why is batch culture preferred for antibiotic production?	COIII	1
	(e) How does microbial reproduction differ between prokaryotes and eukaryotes?	COIII	1
	Section II		
Q2	What are the mechanisms of action of alcohols in microbial control? List five chemical disinfectants and their mode of action.	COII	2
Q 3	Why is overuse of disinfectants a concern in public health? Why are some bacteria more resistant to disinfectants than others?	COII	2.5
Q 4	How does continuous culture maintain bacteria in the exponential phase? Compare the growth rate of bacteria in batch	COII	2.5

		culture vs. continuous culture.		
Q 5	What is the significance of the Minimum Inhibitory Concentration (MIC)? What is the difference between bactericidal and bacteriostatic antibiotics?	COII	2.5
Q 6	Give a brief account of Bubonic plague and Dengue fever? Discuss their causal agent, transmission, diagnosis and prevention control.	COIV	2.5
	Section III		
Q 5	Explain the mechanism of protein synthesis inhibitors such as tetracyclines and aminoglycosides. Why are cell membrane-targeting antibiotics (e.g., polymyxins) mainly used against gram-negative bacteria?	COIII	4
Q 6	Describe the process of transduction and the role of bacteriophages in it. What is transformation in bacteria, and how does it occur? Explain with suitable examples.	COIV	4
	Total marks		25