

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS- 2026

B. Tech.-IV Semester (Biotechnology)

COURSE CODE (CREDITS): 25B11BT412 (03)

MAX. MARKS: 35

COURSE NAME: Microbiology

COURSE INSTRUCTORS: Ashok Kumar Nadda

MAX. TIME: 2.0 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) What is lysogeny? How is it related to specialized transduction?	CO III	1
	(b) What are episomes? How are they related to plasmids?	COIII	1
	(c) What are biopesticides? Name two microbial biopesticides used at commercial scale.	COIV	1
	d) How could excessive use of antibiotics indirectly affect probiotic populations in the human body?	COV	1
	(e) Which bacterial disease is caused by <i>Clostridium tetani</i> ? How can it be prevented?	COIV	1
Section II			
Q2	With the help of a suitable diagram describe the mechanism of conjugation in bacteria. Why conjugation is considered a mode of horizontal gene transfer?	COIII	2.5
Q3	Analyze how misuse of antibiotics in livestock farming can influence human health. State the various reasons of development of antimicrobial resistance.	COII	2.5
Q4	Name the causative agent of typhoid fever and describe its mode of transmission. Explain the role of contaminated food and water in the spread of typhoid.	COV	2.5

Q 5	How contaminated drinking water does contributes to cholera epidemics. What are the major preventive measures used during cholera outbreaks? Discuss the importance of hygiene and sanitation in cholera prevention.	COIV	2.5
Q 6	Compare the transmission of HIV with that of airborne infectious diseases. Suggest preventive strategies to reduce the spread of HIV/AIDS in society.	COV	2.5
Q 7	Differentiate between F ⁺ , F ⁻ , and Hfr bacterial cells. What happens when an Hfr cell conjugates with an F ⁻ cell?	COIII	2.5
Section III			
Q8	Compare fermentation and respiration with suitable examples. Describe how environmental conditions influence microbial metabolic activity. Describe the role of electron transport chains in energy generation.	COIII	5
Q 9	Why can transduction transfer genes even between bacteria that do not come into direct contact? How do plasmids and bacteriophages together contribute to rapid microbial evolution?	COIV	5
Q10	Differentiate between probiotics and prebiotics. Name any four commonly used probiotic microorganisms. How do probiotics help in preventing antibiotic-associated diarrhea? What are the various mechanism by which probiotics inhibit pathogenic microorganisms?	COV	5
Total marks			35