

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS- 2025

B. Tech.-IV Semester (Biotechnology)

COURSE CODE (CREDITS): 18B11BT414 (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) Define generation time of microorganisms. How does it differ among various microbial genera?	CO II	1
	(b) What causes tetanus, and how does it enter the body? How can tetanus be prevented?	COIII	1
	(c) How does lytic and lysogenic cycles differ from each other	COIV	1
	(d) Explain the role of UV radiation in microbial control.	COIII	1
	(e) How does the experiment conducted by Avery, MacLeod and McCarty proven the transfer of genetic material from virulent strain to non virulent strain of <i>Streptococcus pneumoniae</i> .	COIV	1
Section II			
Q2	What are the various mechanisms by which probiotics inhibit the pathogenic microbes? Give the examples of common probiotic genera and their sources.	COV	2.5
Q3	Describe the causative agent, mode of transmission and major symptoms of tuberculosis. How can tuberculosis be diagnosed and treated in a patient?	COIV	2.5
Q4	What are biofertilizers? How do they differ from chemical fertilizers? Name three types of biofertilizers and the microbes	COV	2.5

	involved in each.		
Q 5	Discuss the causative agent responsible for typhoid fever and its mode of transmission. What are the major symptoms diagnostic techniques and antibiotics prescribed for typhoid?	COII	2.5
Q 6	How would you prepare and sterilize a culture medium for the cultivation of bacteria in the lab? How do differential media work? Mention two commonly used differential media.	COII	2.5
Q 7	What is a biofilm? Discuss the various stages in the development of biofilm diagrammatically.	COV	2.5
Section III			
Q 8	Describe the role of <i>Bacillus thuringiensis</i> in pest control. Illustrate the mechanism of action of <i>Bacillus thuringiensis</i> with the help of suitable diagram. What are the environmental benefits of using biopesticides?	COIII	5
Q 9	Give a detailed account of the structure and significance of bacterial endospores. Outline the various stage of sporulation with the help of suitable diagram. What makes the endospore resistant to heat, radiation, and desiccation?	COII	5
Q 10	What is a biosensor and its main components? Describe the role of biological elements in a biosensor. Explain the working principle of a microbial biosensors.	COV	5
	Total marks		35