

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

M. Tech. -Ist Semester (BT)

COURSE CODE (CREDITS): 18M1WBT134 (3)

MAX. MARKS: 25

COURSE NAME: MICROBIAL ECOLOGY

COURSE INSTRUCTORS: AKN

MAX. TIME: 1.5 Hour

Note: (a) All questions are compulsory.

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

Q.No	Question	Marks
Section I		
Q1	a) Give two examples of nematophagous fungi.	1
	b) In which cell organelle does symbiosome formation occur?	1
	c) Explain how syntrophic relationships are important in anaerobic digestion.	1
	d) What is the function of the <i>peribacteroid membrane</i> ?	1
	e) Define protocoeperation and give a microbial example.	1
Section II		
Q 2	Discuss the role of quorum sensing in coordinating microbial population behavior. What role do quorum sensing molecules play in microbial communication?	2.5
Q 3	How does RT-PCR help in quantifying the expression of functional genes in environmental microbes?	2.5
Q 4	How do biofilms illustrate cooperative microbial interactions?	2.5
Q 5	How does mycorrhizal association indirectly influence other microbial populations in the rhizosphere?	2.5

	Section III	
Q 6	Which molecules mediate communication between rhizobia and plant roots during symbiosis? Illustrate the formation of symbiosomes in nitrogen fixation with the help of suitable diagram.	5
Q 7	Explain the mechanisms of nematode capture by nematophagous fungi. Discuss the different types of trapping devices (adhesive nets, knobs, constricting rings) formed by nematophagous fungi. Explain the ecological significance of nematophagous fungi in nutrient cycling and soil health.	5
	Total	25