PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch – **APPLIED MICROBIOLOGY**

INTRODUCTORY MICROBIOLOGY, SYSTEMATICS & TRADITIONAL KNOWLEDGE SYSTEMS

Time: Three Hours | Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Who discovered phagocytosis and is called the "Father of Natural Immunity"? a) Robert Koch b) Louis Pasteur c) Elie Metchnikoff d) Alexander Fleming	K1	CO1
	2	Predict which of the following is NOT an example of emerging infectious disease? a) SARS-CoV-2 b) Ebola c) Smallpox d) Zika virus	K2	CO1
2	3	Point the Ziehl–Neelsen stain is used for identifying: a) Gram-positive bacteria b) Acid-fast bacteria c) Endospores d) Fungi	K1	CO2
	4	Express the "Three-domain system" is based on analysis of: a) 18S rRNA b) 16S rRNA c) Ribosomal proteins d) Metabolic enzymes	K2	CO2
3	5	Which bacterial group is known for nitrogen fixation and phototrophy? a) Cyanobacteria b) Firmicutes c) Spirochaetes d) Planctomycetes	K1	CO3
	6	How planctomycetes are unique because they: a) Lack cell walls and show internal compartmentalization b) Produce endospores c) Are strict anaerobes only d) Have mycolic acids in cell walls	K2	CO3
4	7	State Oomycetes differ from true fungi because they have: a) Chitin in cell walls b) Diploid hyphae with cellulose walls c) Conidia formation d) Septate hyphae with cross walls	K1	CO4
	8	Review the storage product of Rhodophyta (red algae) is: a) Starch b) Floridean starch c) Laminarin d) Chrysolaminarin	K2	CO4
5	9	Indicate, Tulsi (Ocimum sanctum) shows antimicrobial activity mainly due to: a) Chlorophyll b) Eugenol and ursolic acid c) Lactic acid d) Tannins	K1	CO5
	10	Express the gut microbiome concept in Ayurveda is closely connected to: a) Vyadhikshamatva only b) Koshta and Agni c) Vrikshayurveda d) Panchamahabhutas	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the germ theory of diseases and its significance.	K2	CO1
		(OR)		
	11.b.	Discuss the concept of containment facility and biosafety levels.		
2	12.a.	Provide short notes on G+C content analysis and slot-blot hybridization.	K3	CO2
		(OR)		
	12.b.	Predict the difference between culture-dependent and culture-independent approaches.		
3	13.a.	Correlate the significance of Bergey's Manual of Systematic Bacteriology in bacterial taxonomy.	K4	CO3
		(OR)		
	13.b.	Distinguish the occurrence, diversity, and ecological significance of Archaea and Cyanobacteria in natural ecosystems.		
4	14.a.	Conclude the structural diversity of chloroplasts in algae and their role in photosynthesis.	K5	CO4
		(OR)		
	14.b.	Criticize the classification of protozoa with examples.		
5	15.a.	Outline the significance of Panchamahabhuta theory and its relevance to microbial ecology.	K6	CO5
		(OR)		
	15.b.	Compose Panchagavya and its microbial significance in agriculture.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Describe the spontaneous generation theory and its disproval.	K1	CO1
2	17	Classify molecular-based techniques used in microbial classification and phylogeny.	K3	CO2
3	18	Explain the importance of microbial diversity in different ecosystems.	K4	CO3
4	19	Prescribe the ecological significance and applications of different algal groups.	K5	CO4
5	20	Compose the concept of vital energy and its significance in traditional medicine.	K6	CO5

Z-Z-Z END