PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch – **MICROBIOLOGY**

PRINCIPLES OF MICROBIOLOGICAL METHODS

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	The distance between a specimen and the objective lens during focus is called _____. (a) Working distance (b) Focal length (c) Resolving power (d) Numerical aperture	K1	CO1
	2	The main component of an AFM that detects deflection is the _____. (a) Electron gun (b) Photodiode detector (c) Optical fiber (d) Cantilever	K2	CO1
2	3	The direct microscopic count method is used to _____. (a) Measure cell size only (b) Count total number of cells (c) Count only viable cells (d) Estimate bacterial mass	K1	CO2
	4	The endospore staining technique was developed by _____. (a) Gram (b) Ziehl and Neelsen (c) Schaeffer and Fulton (d) Leifson	K2	CO2
3	5	Tyndallization is a method used to _____. (a) Filter sterilize solutions (b) Sterilize surgical instruments (c) Pasteurize milk (d) Sterilize thermolabile media	K1	CO3
	6	The holding period of sterilization for hot air oven _____. (a) 160 °C for 30 min (b) 121 °C for 30 min (c) 160 °C for 1 hr (d) 121 °C for 1 hr	K2	CO3
4	7	Disinfectants differ from antiseptics as they _____. (a) are used on living tissues (b) are used on inanimate objects (c) are milder in action (d) do not kill spores	K1	CO4
	8	Alcohols such as ethanol act best at ------ % concentration. (a) 100 (b) 95 (c) 70 (d) 40	K2	CO4
5	9	The process of freeze-drying is scientifically known as _____. (a) dehydration (b) cryopreservation (c) lyophilization (d) desiccation	K1	CO5
	10	During media preparation, pH adjustment is done _____. (a) before pouring but after inoculation (b) after sterilization (c) before sterilization (d) after inoculation	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.	Bring out the working principle of a compound light microscope.	K4	CO1
		(OR)		
	11.b.	Briefly discuss the importance of resolution and magnification in microscopy.		
2	12.a.	Explain the principle of Gram staining.	K4	CO2
		(OR)		
	12.b.	Describe the Ziehl–Neelsen staining technique. Point out its applications.		
3	13.a.	Give the mechanism of sterilization by ultraviolet radiation and its limitations.	K4	CO3
		(OR)		
	13.b.	Write a detailed note on the principle, methods, and applications of pasteurization		
4	14.a.	Present the mechanism of action of aldehydes as sterilizing agents.	K4	CO4
		(OR)		
	14.b.	Depict the functional mechanism of halogen-based sterilizing agents.		
5	15.a.	Exemplify selective and differential media. State their uses.	K4	CO5
		(OR)		
	15.b.	Distinguish between the pour plate and spread plate methods with neat labelled diagrams.		

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	Explain the working principle and applications of TEM.	K4	CO1
2	17	Elaborate in detail about capsular staining with neat diagrams.	K4	CO2
3	18	Illustrate the principle and procedure of moist heat sterilization with example.	K4	CO3
4	19	Describe the different types of chemical sterilizing agents and their uses.	K4	CO4
5	20	Summarize various methods of pure culture isolation and their principles.	K4	CO5

Z-Z-Z END