

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023
(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	Resolving power of a microscope is a function of ____. a) Wavelength of light used b) Numerical aperture of lens system c) Refractive index d) Wavelength of light used and numerical aperture of lens system	K1	CO1
	2	Atomic force microscopy uses _____. a) X-rays b) Nickel tip c) Infrared light d) Nanosized tip	K2	CO1
2	3	Which stain is commonly used in fluorescent staining for nucleic acid visualization? a) Carbol fuchsin b) DAPI (4',6-diamidino-2-phenylindole) c) Methylene blue d) Safranin	K1	CO2
	4	Teichoic acid present in Gram-positive bacteria can bind to which ion? a) Fe ions b) Phosphorus ions c) Mg ions d) Sulphur ions	K2	CO2
3	5	Which of the following radiations have the energy to knock electrons away from molecules and ionize them? a) Non-ionizing radiations b) Acoustic radiations c) Subatomic particles d) Ionizing radiations	K1	CO3
	6	Which of the following is not an example of depth filters? a) PTFE membranes b) Glass fiber c) Cotton d) Sintered Metals	K2	CO3
4	7	1% of phenol acts as _____. a) Antiseptic b) Disinfectant c) Antibiotics d) Antigen	K1	CO4
	8	Which of the following is the mode of action of formaldehyde? a) interference with glycolysis b) shows oxidizing property c) combines with vital nitrogen compounds d) changes the permeability of cytoplasmic membrane	K2	CO4
5	9	Roll-tube technique is used to isolate _____. a) aerobes b) anaerobes c) facultatives d) stringent anaerobes	K1	CO5
	10	Which of the following is a function of cryoprotective agents? a) for long-term preservation of cultures b) prevents cell damage due to ice crystal formation c) prevents formation of ice d) to trap the liquid nitrogen	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.	Compare the bright and dark field microscopy with neat sketch.	K2	CO1
	(OR)			
	11.b.	Demonstrate the working principle of fluorescent Microscopy with neat diagram.		
2	12.a.	Elaborate the role of micrometry in bacterial size measurement.	K3	CO2
	(OR)			
	12.b.	How will you identify the bacteria based on cell wall composition? Explain the protocol neatly.		
3	13.a.	Define Sterilization. Explain the principle of moist heat sterilization in detail.	K3	CO3
	(OR)			
	13.b.	State the role of radiation and filters in sterilization process.		
4	14.a.	Give an inference about the potential activity of chemical agents in sterilization.	K4	CO4
	(OR)			
	14.b.	Interpret the role of halogens and aldehyde in sterilization.		
5	15.a.	Define media. Encounter the role of different types of media in bacterial growth with any 2 examples.	K4	CO5
	(OR)			
	15.b.	How will you cultivate anaerobic organisms? Explain with neat protocol.		

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	Elaborate the working principles of Scanning electron microscopy and discuss the specimen preparation.	K4	CO1
2	17	Predict the importance of dyes and stains in morphological identification of microorganisms	K6	CO2
3	18	Justify the role and importance of physical method of sterilization in detail.	K5	CO3
4	19	Define Disinfection? Explain the following chemical methods of sterilization Heavy metals, Alcohols, Dyes and Phenol in detail	K5	CO4
5	20	How will you cultivate and preserve the culture? Elaborate the same with neat sketch.	K4	CO5

Z-Z-Z

END