22MBU102N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(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)**

Question No.	Question	K Level	CO
1	Name the microscope which is used to observe very thin bacteria (i) Bright field (ii) Dark field (iii) Fluorescence (iv) Phase contrast	K1	CO1
2	Viruses are very small microorganism. It will be observed by using microscope which has high resolution. Relate this statement to the following microscope. (i) Bright field (ii) Dark field (iii) Fluorescence (iv) Electron	K2	CO1
3	Which staining technique is used to differentiate gram negative bacteria from gram positive bacteria (i) Simple staining (ii) Acid fast staining (iii) Gram staining (iv) Capsular staining	K1	CO3
4	Show the staining technique which is used to stain nuclear material. (i) Ziehl Neelsen staining (ii) Schaeffer fulton staining (iii) Negative staining (iv) Giemsa staining	K2	CO3
5	Who developed the technique tyndallization? (i) Louis pasteur (ii) John Tyndal (iii) Joseph Lister (iv) Joseph Murray	K1	CO2
6	Show the method used for the sterilization of media (i) Pasteurization (ii) Dry heat (iii) Tyndallization (iv) Autoclaving	K2	CO2
7	Name the disinfectant which is used for the disinfection of water (i) Chlorine (ii) Iodine (iii) Alcohol (iv) Phenol	K1	CO4
8	The antimicrobial activity of many disinfectants is compared with phenol. Relate this statement to the following technique. (i) Serial dilution (ii) Phenol coefficiency (iii) Tyndallization (iv) Pasteurization	K2	CO4
9	Which method is used to preserve bacterial culture for long time? (i) Periodic transfer (ii) Mineral oil layering (iii) Liquid nitrogen (iv) Lyophilization	K1	CO5
10	Show the media which is used to differentiate haemolytic bacteria from non haemolytic bacteria (i) MacConkey (ii) Nutrient Agar (iii) EMB (iv) Blood agar	K2	CO5

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SECTION - B (35 Marks)

Answer **ALL** questions

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

Question No.	Question	K Level	CO
11.a.	Classify microscope. Explain the principle and uses of Dark field microscope.	K2	CO1
	(OR)		
11.b.	Illustrate the principle, mechanism and uses of Fluorescence microscope.		
12.a.	Identify the staining technique which is used to stain acid fast bacteria. Explain its principle and procedure.	K3	CO3
	(OR)		
12.b.	Select the method which is used to measure the size of bacteria and explain it.		
13.a.	Choose the physical agents which are used for the sterilization of heat sensitive materials.	K3	CO2
	(OR)		
13.b.	Develop a technique which is used to kill endospore.		
14.a.	Distinguish between disinfectant and antiseptic. Explain the mode of action and uses of alcohol.	K4	CO4
	(OR)		
14.b.	List out different types of disinfectants and explain the mode of action and uses of phenol.		
15.a.	Classify media based on agar concentration. How will you prepare it.	K4	CO5
	(OR)		
15.b.	List out different types of methods which are used for preservation of bacterial culture and write about lyophilization.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

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

Question No.	Question	K Level	CO
16	Distinguish between magnification and resolution. Explain the principle, mechanism and uses of phase contrast microscope.	K4	CO1
17	Simply the procedure of gram staining technique and explain its principle.	K4	CO3
18	Distinguish dry heat from moist heat and explain the principle and uses of autoclave.	K4	CO2
19	List the heavy metals which are used as antibacterial agents. Explain their mode of action and uses.	K4	CO4
20	List out different types of methods used for cultivation of anaerobic bacteria and describe in detail about wright's tube method.	K4	CO5

Z-Z-Z END