

**PSG COLLEGE OF ARTS & SCIENCE**  
(AUTONOMOUS)  
**MSc DEGREE EXAMINATION MAY 2025**  
(First Semester)

Branch - **BIOCHEMISTRY**  
**ANALYTICAL BIOCHEMISTRY**

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	Name the technique used to analyze the fatty acid composition of lipids a) Thin layer Chromatography      b) Gas Chromatography c) Spectrophotometry                d) Electrophoresis	K1	CO1
	2	Choose the solvent that is commonly used for the extraction of alkaloids from plant material. a) Methanol      b) Ethanol      c) Water      d) Chloroform	K2	CO1
2	3	Interpret the technique that is commonly used to measure enzyme activity based on the change in absorbance of a substrate or product. a) Spectrophotometry      b) Gas Chromatography c) Mass Spectrometry      d) Nuclear Magnetic Resonance	K2	CO2
	4	In density gradient centrifugation, show which one determines the position of particles within the gradient. a) The temperature of the centrifuge      b) The density of the particles c) The speed of the centrifuge                d) The type of rotor used	K2	CO2
3	5	Which chromatography method is employed in the separation and analysis of environmental pollutants, such as pesticides, in water samples? a) Thin Layer Chromatography (TLC) b) Gas Chromatography (GC) c) Ion Exchange Chromatography d) Size Exclusion Chromatography	K1	CO2
	6	Infer the type of light that is used in Circular Dichroism (CD) spectroscopy. a) Unpolarized light                              b) Linearly polarized light c) Circularly polarized light                    d) Infrared light	K2	CO4
4	7	What type of DNA sequence do restriction endonucleases most commonly target? a) Single-stranded regions                    b) Random sequences c) Palindromic sequences                      d) Methylated sequence	K1	CO3
	8	Which technique are nucleic acid probes commonly used to identify specific DNA or RNA sequences within a mixture? a) Gel electrophoresis                              b) Northern blotting c) PCR amplification                                d) DNA sequencing	K1	CO3
5	9	Which property of nucleic acid probes is crucial for their use in detecting specific genetic mutations? a) Specificity of sequence binding b) Ability to degrade DNA c) Capability to amplify DNA d) Resistance to temperature changes	K1	CO3
	10	Show the component that is typically added to the Ames test to simulate metabolic activation of mutagens a) Antibiotic b) Hepatic microsomal enzyme preparation (S9 mix) c) Buffer solution d) DNA polymerase	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.	Organize the extraction of alkaloids.	K3	CO1
	(OR)			
	11.b.	Construct the technique of 2D gel electrophoresis.		
2	12.a.	Explain the Radiometric assay of enzymes.	K4	CO2
	(OR)			
	12.b.	Examine the principle and applications of Autoradiography.		
3	13.a.	Analyze the principle and applications of Ion exchange chromatography.	K4	CO2
	(OR)			
	13.b.	Examine the principle and applications of X-ray photoelectron spectrometry.		
4	14.a.	Interpret the technique and significance of Southern blotting.	K5	CO4
	(OR)			
	14.b.	Explain the technique and applications of KASPar assay.		
5	15.a.	Assess the condition of Sickle cell anemia.	K5	CO5
	(OR)			
	15.b.	Interpret the principle and applications of AMES test.		

**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	Survey the extraction,,identification and characterization of proteins.	K4	CO1
2	17	Analyze the Instrumentation and applications of Analytical Ultracentrifuge.	K4	CO2
3	18	Explain the components,technique and uses of Flow Cytometry.	K5	CO2
4	19	Examine the principle,diagnostic and laboratory applications of RT PCR.	K4	CO3
5	20	Interpret DNA Finger printing technique and applications.	K5	CO5