PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch – **NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS**

CHEMISTRY -I

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	Find the type of titration commonly used for determining the concentration of a strong acid like HCl. a) Redox titration b) Acid-base titration c) Precipitation titration d) Complexometric titration	K1	CO1
	2	Classify the following error types in analytical chemistry: determinate and indeterminate errors. a) Determinate: systematic; Indeterminate: random b) Determinate: random; Indeterminate: systematic c) Both are gross errors d) Neither is common	K2	CO1
2	3	The concept describing acids as proton donors and bases as proton acceptors is a) Arrhenius concept b) Bronsted-Lowry concept c) Lewis concept d) Henderson-Hasselbalch	K1	CO2
	4	Interpret the oxidation number of sulfur in H_2SO_4. a) +4 b) +6 c) -2 d) +2	K2	CO2
3	5	List two examples of heterocyclic compounds. a) Furan, Pyridine b) Ethane, Propane c) Methanol, Ethanol d) Glucose, Fructose	K1	CO3
	6	Show an example of a process affecting protein structure. a) Denaturation b) Hydrogenation c) Polymerization d) Sublimation	K2	CO3
4	7	Name a commonly used tranquilizer. a) Diazepam b) Aspirin c) Penicillin d) Adrenaline	K1	CO4
	8	Infer a characteristic of a good dye for textile use. a) Fastness to washing and light b) High toxicity c) Low solubility d) Unstable structure	K2	CO4
5	9	How is molality defined in terms of solute and solvent? a) Moles of solute per kg of solvent b) Moles of solute per liter of solution c) Grams of solute per liter d) Moles of solute per mole of solvent	K1	CO5
	10	Relate Langmuir adsorption isotherm to surface coverage. a) Describes adsorption equilibrium on surfaces b) Applies only to gases in liquids c) Concerns only ionic solutions d) Predicts reaction rates	K2	CO5

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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.	Apply the principles of laboratory safety for handling toxic chemicals like cyanides in an analytical chemistry lab.	K3	CO1
		(OR)		
	11.b.	Develop a strategy for minimizing errors in analytical measurements like volumetric titrations.		
2	12.a.	Compare ionic and covalent bonding.	K4	CO2
		(OR)		
	12.b.	Examine the characteristics of intermolecular and intramolecular hydrogen bonding with examples.		
3	13.a.	Write the preparation and properties of furan and thiophene.	K6	CO3
		(OR)		
	13.b.	Define amino acids. How are they classified? Write the preparation of glycine and alanine.		
4	14.a.	Examine the mode of action of sulpha drugs in inhibiting bacterial growth.	K5	CO4
		(OR)		
	14.b.	What are requisites of a dye? Define chromophore and auxochrome with examples.		
5	15.a.	Define Molarity, Normality, Molality, Molefraction and ppm.	K4	CO5
		(OR)		
	15.b.	Define chemisorption and physisorption write examples and differences between the two.		

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	Discuss the principle of the following titrations with an example. (i) Acid – Base (ii) Redox (iii) Precipitation.	K5	CO1
2	17	Based on Arrhenius concept, Bronsted-Lowry concept and Lewis concept how are acids and based defined? Explain with examples.	K5	CO2
3	18	Construct the different levels of protein structure (primary, secondary, tertiary) and their significance.	K6	CO3
4	19	Elaborate the importance of certified food colorants like tartrazine in food industry.	K6	CO4
5	20	i) State Lambert's law and Beer's law. ii) Define Fluoresence, Phosphoresence and chemiluminesence.	K6	CO5

Z-Z-Z END