PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Branch - **BOTANY**

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	Which of the following orbitals is spherical in shape? a) s b) p c) d d) f	K1	CO1
	2	Oxidation number of P in PCl_5 is: a) +3 b) +5 c) +2 d) –3	K2	CO1
2	3	The basic unit of terpenoids is: a) Benzene ring b) Isoprene unit c) Acetyl group d) Pyridine ring	K1	CO2
	4	Rayon is a derivative of: a) Protein b) Cellulose c) Starch d) Rubber	K2	CO2
3	5	A solution containing 1 g of solute in 1 million grams of solution has concentration: a) 1% b) 1 ppm c) 1 molarity d) 1 normality	K1	CO3
	6	Distillation under reduced pressure is used for: a) High-boiling liquids b) Solids c) Gases d) Low-boiling liquids	K2	CO3
4	7	The rate constant for a first-order reaction has the unit: a) mol L^{-1} s^{-1} b) L mol^{-1} s^{-1} c) s^{-1} d) mol^2 L^{-2} s^{-1}	K1	CO4
	8	In catalytic poisoning the activity of catalyst is: a) Increased b) Decreased c) Unchanged d) Reversible always	K2	CO4
5	9	The main pollutant responsible for acid rain is: a) CO_2 b) SO_2 and NO_x c) CH_4 d) O_3	K1	CO4
	10	Which pesticide caused the famous Bhopal Gas Tragedy? a) DDT b) MIC c) BHC d) Malathion	K2	CO4

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.	Draw and explain the shapes of p and d orbitals.	K3	CO1
		(OR)		
	11.b.	Explain oxidizing agents with suitable examples and reactions.		

Cont...

2	12.a.	Enumerate the preparation, properties, and uses of benzene.	K3	CO2
	(OR)			
	12.b.	Describe the structure and applications of starch.		
3	13.a.	Explain the following concentration terms with suitable examples i) Normality ii)Mole fraction iii) ppm.	K2	CO3
	(OR)			
	13.b.	Discuss Paper chromatography.		
4	14.a.	Define order and molecularity of a reaction. Distinguish between them with examples.	K3	CO4
	(OR)			
	14.b.	Give an account on characteristics of catalytic reactions.		
5	15.a.	Discuss global warming and analyse its consequences.	K3	CO4
	(OR)			
	15.b.	Explain eutrophication and its effects on aquatic life.		

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 VSEPR theory and predict the shapes of BF_3, and SF_6,	K4	CO1
2	17	Explain the isolation, structure, and uses of geraniol.	K4	CO2
3	18	Describe any two methods of distillation techniques.	K4	CO3
4	19	Derive the integrated rate equation for a first-order reaction. Discuss its half-life period.	K3	CO4
5	20	Discuss water treatment in detail.	K4	CO4

Z-Z-Z END