

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(Third Semester)

Branch – CHEMISTRY

GENERAL CHEMISTRY –III

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	Why borazole resembles benzene? (a) Both have delocalized π -electrons (b) Both are ionic (c) Both lack conjugation (d) Both contain only carbon	K1	CO1
	2	Which of the following relate an interhalogen compound? (a) Cl_2 (b) IF_7 (c) HCl (d) NaCl	K2	CO1
2	3	Identify the following compound from which Benzaldehyde is mainly prepared (a) Toluene (b) Benzyl alcohol (c) Benzophenone (d) Acetophenone	K1	CO2
	4	Find out the acid related to the synthesis of aspirin (a) Benzoic acid (b) Salicylic acid (c) Cinnamic acid (d) Acrylic acid	K2	CO2
3	5	Identify 1,1-Dichloroethane is a matching of (a) Vicinal dihalide (b) Geminal dihalide (c) Trihalide (d) Monohalide	K1	CO3
	6	Can you interpret the number of hydroxyl group in Resorcinol? (a) 1 (b) 2 (c) 3 (d) 4	K2	CO3
4	7	Which of the following is fit for a spontaneous process? (a) Only with external energy (b) Without external help (c) Only at high temperature (d) Only under pressure	K1	CO4
	8	Translate Gibbs free energy (G) is as (a) $G = H + TS$ (b) $G = H - TS$ (c) $G = U + PV$ (d) $G = TS - H$	K2	CO4
5	9	What is chemical potential? (a) The total energy of a system (b) The partial molar Gibbs free energy of a component (c) The volume of a mixture (d) The temperature of a substance	K1	CO5
	10	The van't Hoff equation relates the change in equilibrium constant with (a) Pressure (b) Temperature (c) Volume (d) Entropy	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.	Inspect the preparation method of polymetaphosphate and analyze its chemical properties.	K4	CO1
		(OR)		
	11.b.	Compare and contrast the structure of dithionous and dithionic acids.		
2	12.a.	Apply your knowledge to illustrate the preparation, properties and uses of cinnamaldehyde.	K3	CO2
		(OR)		
	12.b.	Organize information on the preparation, properties and uses of acrylic acid.		
3	13.a.	Compare vicinal and geminal dihalides with suitable examples.	K2	CO3
		(OR)		
	13.b.	Describe the differences between primary, secondary, and tertiary alcohols		
4	14.a.	Apply the second law of thermodynamics to solve the limitations of the first law by explaining how it determines the direction of spontaneous processes.	K3	CO4
		(OR)		
	14.b.	Construct the Gibbs free energy equation for an isothermal process and explain the terms involved.		
5	15.a.	Analyze the effect of T and P on the chemical potential of an ideal gas. What patterns can you identify?	K4	CO5
		(OR)		
	15.b.	Conclude how the equilibrium constant depends on T using the van't Hoff equation.		

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	Examine how silicone preparation method affects its polymeric structure and analyze its properties.	K4	CO1
2	17	Analyze the preparation, properties and uses of acrolein and phthalic acid.	K4	CO2
3	18	Contrast the preparation and properties of mono-, di-, and tri-hydric alcohols, and assess how hydroxyl groups affect their uses.	K4	CO3
4	19	Analyze the Gibbs-Helmholtz equation and its role in determining reaction spontaneity with temperature.	K4	CO4
5	20	Distinguish the relations between K _p , K _c and K _x .	K4	CO5

Z-Z-Z

END