

Name: Enrolment No:			
UPES End Semester Examination, December 2025			
Program Name : B.Sc Chemistry Course Name : s- AND p- BLOCK ELEMENTS Course Code : CHEM2026		Semester : III Time : 3 hours Max. Marks: 100	
Instructions: Attempt all the questions. There is an internal choice in Question 9 and Question 11.			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	What are Hard & soft acids & bases? Explain with examples.	4	CO1
Q 2	Explain why BF_3 acts as a Lewis acid.	4	CO1
Q 3	Why do alkali metals impart characteristic flame colors while alkaline earth metals show less intense colors?	4	CO2
Q 4	Write short notes on basic beryllium acetate.	4	CO2
Q 5	Briefly comment on van Arkel-de Boer process.	4	CO1
SECTION B (4Qx10M= 40 Marks)			
Q 6	Explain a) The difference in the stability of AgI , AgCl , AgBr , AgF b) The difference in the stability of MgS and FeS .	5+5	CO1
Q 7	Draw structures of the following. Determine the oxidation state of the central atom. a) Chlorous acid b) Pyrophosphorous acid c) Meta phosphoric acid d) Marshall's acid e) Caro's acid	10	CO2
Q 8	Illustrate how structural differences among allotropes of carbon (diamond, graphite, fullerenes) affect their physico-chemical properties.	10	CO2
Q 9	Explain structure, properties and applications of borazine.	10	CO3
OR			

	How will you distinguish the following. Explain with suitable examples. a) Homopolymers and Heteropolymers b) Addition polymers and condensation polymers.		
SECTION-C (2Qx20M=40 Marks)			
Q 10	a) Discuss hybridization, electronic and molecular geometry of the following molecules i. XeF₄ ii. IF₅ iii. XeOF₂ b) Describe how the inert pair effect influences the oxidation states of p-block elements.	12+8	CO3
Q 11	a) Discuss different types of hydrides with suitable examples. b) Briefly explain pseudohalogens. OR a) Draw MO diagram for XeF₂. Calculate bond order. b) What are silicones? Describe their synthesis, structures, and applications.	10+10	CO3