

Subject Code—62427

B. Sc. EXAMINATION

(Main/Reappear) (Batch 2020 Onwards)

(Fifth Semester)

CHEMISTRY

Paper-II

CCL-504(ii)

Chemistry of Main Group Elements-II

Time : 3 Hours

Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) Discuss the structure of borazine. 2

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P.T.O.

- (b) Which among hydrides of group-15 is most stable ? Explain it. 2
- (c) I_3^- exists and F_3^- doesn't. Why ? 2
- (d) What are pseudohalogens and pseudohalide ions ? 2
- (e) Why their is little probability of formation of compound of Helium ? 2
- (f) Explain the structure and hybridization of XeF_2 . 2
- (g) Explain resonance structure of $(NPCl_2)_3$. 2
- (h) Discuss silicone elastomers and their use. 2

Unit I

2. (a) Discuss the following properties of group-15 hydrides : 12
- Boiling point
 - Thermal stability
 - Basic strength
 - Reducing character.

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- (b) Discuss reaction of diborane with ammonia and alkali. 4

3. (a) Draw structure of the following : 12

- ClO_4^-
- $HClO_4$
- B_2H_6
- P_4O_6

- (b) Complete the following reactions : 4

- $P_4O_6 + H_2O (Hot) \longrightarrow$
- $P_4O_{10} + H_2O (Cold) \longrightarrow$

Unit II

4. (a) Explain structure of the following : 12

- IF_7
- PCl_3
- IF_4^-
- IF_5

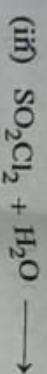
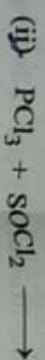
- (b) Why interhalogens are more reactive than parent halogen ? 4

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5. (a) Complete the following reactions : 6

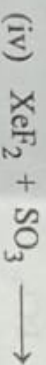
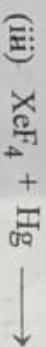
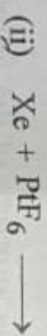


(b) What are Oxohalides of sulphur ? Discuss their preparation, properties and structure.

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Unit III

6. (a) Complete the following reactions : 8



(b) What led Neil Bartlett to prepare first compound of Xenon ? Discuss bonding and shape of XeF_6 .

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4

7. (a) (i) Discuss the preparation of XeF_2 . 4

(ii) What is hybridisation of Xenon in XeF_4 , XeOF_2 , XeOF_4 ? Draw its structure in all these. 8

(b) Why electron affinity of noble gas is zero ? 4

Unit IV

8. (a) Write down use and preparation of long chain silicones. 8

(b) Discuss *dt-pt* bonding model for cyclo triphosphazene. 4

(c) Give reaction of borazine with water and HCl. 4

9. (a) What are Borazines ? Discuss their synthesis and structure. 8

(b) What is meant by ring opening in polymerisation ? 4

(c) What is basic structural unit of silicates ? 4

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