

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 2043 GC-3 Your Roll No.....

Unique Paper Code : 32171301

Name of the Paper : C-5 : Inorganic Chemistry-II S- and P-Block Elements

Name of the Course : B.Sc. (Hons.) Chemistry – CBCS

Semester : III

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on the receipt of this question paper.
2. Attempt any five questions.
3. All questions carry equal marks.

1. Explain the following giving reasons.

(a) Which is more reactive: Borazene or Benzene ?

(b) Which has greater complex forming tendency: Na^+ or Mg^{2+} ?

(c) How does the solubility of sulphates of alkaline earth metals vary down the group ?

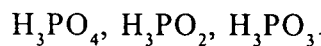
(d) H_2O is liquid whereas H_2S is gas.

(e) Dilute solution of alkali metals in liquid ammonia is blue coloured and paramagnetic in nature. (3×5)

P.T.O.

2. (a) What is hydrometallurgy ? Describe cyanide method for the extraction of silver.
- (b) What is diagonal relationship ? Explain taking examples of boron and silicon.
- (c) Explain anomalous behavior of beryllium giving suitable examples.
- (d) BeCl_2 solution in water is acidic. Explain giving reason. (5,4,3,3)
3. (a) Give the structures and hydrolysis products of P_4O_6 and P_4O_{10} .
- (b) Though lithium has least tendency to lose the outermost electron, it is as powerful a reducing agent as cesium in aqueous solution.
- (c) Which is more ionic: PbO or PbO_2 ? Explain.
- (d) Explain the structure of XeF_2 on the basis of molecular orbital theory.
- (e) Discuss the structure of Ca-EDTA complex. (4,3,3,3,2)
4. (a) How does the slope of the carbon line in Ellingham diagram, explain the versatile tyre of carbon as a reducing agent ?
- (b) Explain: Effect of heating on sulphur.
- (c) What happens when phosphoric acid is heated ? Give balanced reactions.
- (d) Silanes are more reactive than alkanes. Give reason. (5,4,3,3)
5. (a) Discuss the structure of diborane.

- (b) Arrange the following in increasing order of acidic strength. Justify your answer.



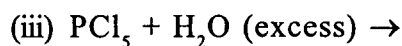
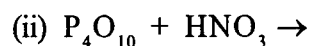
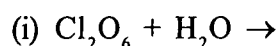
- (c) SiCl_4 easily undergoes hydrolysis whereas CCl_4 does not. Give reason.

- (d) What are ionic hydrides? Give their general properties.

- (e) Arrange the following in increasing order of acidic strength in aqueous medium, giving reasons :



6. (a) Which has greater Lewis base character : NH_3 or PH_3 ? Explain.
- (b) Give the geometry and shape of the following on the basis of valence bond theory : ClF_3 , I_3 , XeF_4 .
- (c) Why are interhalogen compounds more reactive than halogens?
- (d) Draw the structure of three oxoacids of sulphur.
- (e) Complete and balance **any three** of the following :



7. Write short notes on the following : (Any three)

(a) Cryptates and crown ethers

(b) Silicones

(c) Cyclic phosphazenes

(d) Pseudohalogens

(e) Allotropes of carbon

(5×3)