

(c) (i) Give the formula, structure and method of preparation of basic beryllium acetate. 1+2+2=5

(ii) How are poly siloxanes formed? Distinguish between silicon fluids and silicon rubbers. 2+3=5

(d) Write notes on : (any two) 5+5=10

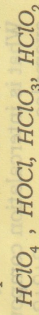
(i) Pseudohalogens

(ii) Pasting process

(iii) Catenation

(e) (i) State the Pauling's rules for determination of strength of mononuclear oxoacids. 3

(ii) Arrange the following in order of descending acid strengths in aqueous solution -



Give explanation. 3

(iii) Pauling's rule is useful in detecting structural anomalies, explain. 2

(iv) What is symbiosis? Explain. 2

(f) What is silicates? Explain the bonding and structure of  $\text{SiO}_4^{4-}$  unit using hybridization. What are different types of silicates? Give their structure. 1+4+3+2=10

The figures in the margin indicate full marks for the questions.

1. Answer the following as directed : 1×7=7

(a) Name the graph of Gibbs Energy ( $\Delta G$ ) versus Temperature (T) for the formation of oxide of metal.

(b) "Group-I elements gets oxidized easily" - State whether True or False.

(c) Write the structural formula of borazine.

(d) What is "basicity of an acid"?

(e) Which one of the following species is conjugate base of  $\text{OH}^-$ ?

(i)  $\text{H}_2\text{O}$

(ii)  $\text{O}^{2-}$

(iii)  $\text{O}_2$

(iv)  $\text{O}_2^{2-}$

(f) "The name inert gas is improper" - Explain the statement.

(g) Calculate the hardness of  $\text{Al}^{3+}$  for the ionization energy, 119.99 eV and electron affinity 28.45 eV.

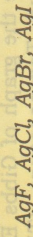
2. Answer the following : 2×4=8

(a) Describe the structure of boric acid.

(b) What is inert pair effect? Arrange the stability of +1 oxidation states of  $\text{Ca}^+$ ,  $\text{Al}^+$ ,  $\text{In}^+$  and  $\text{Tl}^+$  in their increasing order.

(c) Applying Wade's rule, predict and draw the structure of  $\text{CB}_3\text{H}_5$ .

(d) Arrange the following compounds in ascending order of their solubility in water.



Give explanation.

3. Answer any three of the following : 5×3=15

(a) Briefly discuss the bonding and structure of diborane. 5

(b) What is diagonal relationship? Write any four similar properties of Be and Al. 1+4=5

(c) Discuss the Mond's process used in metal refining. 4

(d) What are polyhalides? Give example. How they are different from Interhalogen Compounds? 1+1+3+5=10

(e) Write constructing properties of the borazine and benzene.

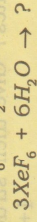
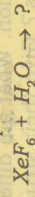
4. Answer any three of the following : 10×3=30

(a) What is Allotropism? Name Different allotropes of carbon. Discuss bonding in graphite. Explain the high thermal and electrical conductivity of graphite. What is intercalation compounds? Give examples. 2+2+2+2+1+1=10

(b) (i) What happens when Xenon is heated in presence of flourine? How the amount of flourine affect the nature of product? 2+2=4

(ii) Discuss the bonding in  $\text{XeF}_6$ . 4

(iii) Complete the following reaction



2