ST. JOSEPH STUDY CENTRE

12th STD: Quarterly Exam **CHEMISTRY** **Time: 2 Hrs / Total Marks: 70**

I. Choose The Correct Answer: [15 x 1 = 15]

1. The metal oxide which cannot be reduced to metal by carbon is
   a) PbO b) Al_2O_3 c) ZnO d) FeO
2. Which of the metal is extracted by Hall-Heroult process?
   a) Al b) Ni c) Cu d) Zn
3. Electrochemical process is used to extract
   a) Iron b) Lead c) Sodium d) silver
4. Which one of the following ores is best concentrated by froth – floatation method?
   a) Magnetite b) Haematite c) Galena d) Cassiterite
5. An aqueous solution of borax is
   a) neutral b) acidic c) basic d) amphoteric
6. Oxidation state of carbon in its hydrides
   a) +4 b) -4 c) +3 d) +2
7. The basic structural unit of silicates is?
   a) $(SiO_3)^{2-}$ b) $(SiO_4)^{2-}$ c) $(SiO)^{-}$ d) $(SiO_4)^{4-}$
8. Which of the following is not sp^2 hybridised?
   a) Graphite b) graphene c) Fullerene d) dry ice
9. Duralumin is an alloy of
   a) Cu,Mn b) Cu,Al,Mg c) Al,Mn d) Al,Cu,Mn,Mg
10. On hydrolysis, PCl_3 gives
    a) H_3PO_3 b) PH_3 c) H_3PO_4 d) $POCl_3$
11. P_4O_6 reacts with cold water to give
    a) H_3PO_3 b) $H_4P_2O_7$ c) HPO_3 d) H_3PO_4
12. Most easily liquefiable gas is
    a) Ar b) Ne c) He d) Kr
13. The most common oxidation state of actinoids is
    a) +2 b) +3 c) +4 d) +6
14. Solid CO_2 is an example of
    a) Covalent solid b) metallic solid c) molecular solid d) ionic solid
15. The vacant space in bcc lattice unit cell is
    a) 48% b) 23% c) 32% d) 26%

II. Answer any 6 of the following questions: [6 x 2 = 12]

Question number 20 is compulsory

16. What are the differences between minerals and ores?
17. What are the various steps involved in extraction of pure metals from their ores?
18. Write a notes on a) Gangue b) Slag
19. Give the basic requirement for vapour phase refining.
20. Give the uses of Borax.
21. How will you identify borate radical?
22. What is inert pair effect?
23. Chalcogens belongs to p-block. Give reason.
24. Give the uses of helium.

III. Answer any 6 of the following questions: **[6 x 3 = 18]**
Question number 29 is compulsory

25. Explain zone refining process with an example.
26. Give the uses of zinc.
27. What is catenation? Describe briefly the catenation property of carbon.
28. Give the uses of silicones.
29. Complete the following reactions $B(OH)_3 + NH_3 \rightarrow$
30. What happens when PCl_5 is heated?
31. Give the uses of argon.
32. What are interhalogen compounds? Give examples.
33. Complete the reactions

$$Xe + F_2 \xrightarrow[400^0C]{Ni\ /\ 200\ atm}$$

IV. Answer the following questions: **[5 x 5 = 25]**

34. a) i) Describe a method for refining nickel. [3]
    ii) Write a notes on calcination. [2]

    [OR]

    b) i) What type of hybridisation occur in a) BrF_5 b) BrF_3. [3]
    ii) How will you prepare chlorine in the laboratory? [2]

35. a) i) Compare lanthanides and actinides. [3]
    ii) Transition metals show high melting points why? [2]

    [OR]

    b) i) Write the IUPAC names for the following complexes. (i) $[Ag(CN)_2]^-$ (ii) $[Pt(NH_3)_2Cl(NO_2)]$ [3]
    ii) Give the difference between double salts and coordination compounds. [2]

36. a) i) Write the postulates of Werner's theory. [3]
    ii) What are the limitations of VB theory? [2]

    [OR]

    b) i) Explain the types of hybridization, geometry and magnetic moment of $[Ni(CN)_4]^{2-}$. [3]
    ii) Limitation of Werner's theory. [2]

37. a) i) Give any three characteristics of ionic crystals. [3]
    ii) Define unit cell. [2]

    [OR]

    b) i) Distinguish tetrahedral and octahedral voids. [3]
    ii) What are point defects? [2]

38. a) i) Calculate the number of atoms in a fcc unit cell. [3]
    ii) Why ionic crystals are hard and brittle? [2]

    [OR]

    b) i) Explain Schottky defect [3]
    ii) Write a note on Frenkel defect. [2]

----------ALL THE BEST----------