+2 CHEMISTRY – UNIT TEST 1

Time :1 hr 30 min **Mark : 75**

Answer all questions **PART I** **14 x 1 = 14**

Choose and write the correct answer

1. 2 s orbital has
   (a) a nodal plane (b) a spherical node
   (c) two spherical node (d) four nodal planes
2. Which of the following has higher bond length?
   (a) Lithium (b) Oxygen (c) Nitrogen (d) Lithium and Nitrogen
3. The type of hybridization for X_eF_6
   (a) Sp^3d^2 (b) Sp^3 (c) Sp^3d^3 (d) Sp^3d
4. Hydrogen bonds are ------ than covalent bonds
   (a) weaker (b) stronger (c) brittler (d) not correlated
5. The factor that decreases the boiling point of a compound is
   (a) stability (b) explosive nature (c) chelation (d) reactivity
6. Total valence electrons for BF_3 is
   (a) 26 (b) 28 (c) 24 (d) 22
7. Carbohydrates and proteins have
   (a) Oxygen bonding (b) nitrogen bonding (c) halogen bonding (d) hydrogen bonding
8. The total number of atoms per unit cell in bcc arrangement is
   (a) 1 (b) 3 (c) 2 (d) 4
9. Which one of the following is the less common defect
   (a) Schottky defect (b) line defect (c) Metal excess defect (d) Frenkel defect
10. The impurity added to silicon, to act as a semiconductor is
    (a) Arsenic (b) Carbon (c) Germanium (d) all of these
11. The examples for Schottky, Frenkel defects are
    (a) NaCl, $AgNo_3$ (b) AgCl, Ag_2O (c) AgBr, NaCl (d) NaCl, AgBr
12. Rutile is
    (a) Cu_2O (b) RuO (c) TiO_2 (d) MoS_2
13. Glasses are considered as
    (a) amorphous solids (b) supercooled liquid (c) pseudo solids (d) all the above
14. FeO and FeS show --------defect
    (a) metal excess (b) Frenkel (c) Schottky (d) metal defeciency

PART II

Answer any seven questions **7 x 3 = 21**

15. How will you predict the hybridization of $BeCl_2$?
16. Why He_2 is not formed?

17. What are all the importance of intramolecular hydrogen bonding?
18. State the relationship between Nb, Na and stability of molecules
19. Determine the number of CsCl units per unit cell. CsCl has bcc arrangement
20. State Bragg's equation
21. What are molecular crystals?
22. Define chirality
23. Differentiate Racemic and Meso form
24. What is optical rotation?

PART –III

Answer any four questions choosing atleast **4 x 5 = 20**

One questions from each section

SECTION -A

25. List down the salient features regarding hybridization
26. Write any five postulates of MO theory

SECTION - B

27. Explain metal excess and metal deficiency defects
28. Explain Bragg's spectrometer method

SECTION- C

29. Discuss the dipole moment of ortho, meta and para disubstituted benzene derivatives
30. Describe the confirmation of cyclohexanol, comment on their stability

PART – IV

Answer any two questions in detail **2 x 10 = 20**

31. (a) Derive De-broglie equation. Write its significance
    (b) Calculate the type of hybridization using valence electron for the following.
    a) IF_7 b) CO_3^{2-} c) NO_2^{2-}
32. (a) What is a super conductor? Write down its applications
    (b) Write a note on geometrical isomerism with a suitable example
33. (a) Write in detail about optical isomerism in tartaric acid
    (b) What are the types of crystals? Explain with examples