# G.N. NATIONAL PUBLIC SCHOOL

## Gorakhnath Road ,Gorakhpur

## Assignment Sheet - 1 : d- and f- Block Elements

1. The incorrect statement for transition elements is
   a. the last electron of these elements enters in *d*-orbital
   b. the common oxidation state of these elements is +3
   c. the properties of these elements is intermediate between *s*- and *p*-block elements
   d. the transition elements with smaller atomic radii is scandium

2. Zinc does not exhibit variable valency due to
   a. presence of complete filled *d*-orbitals
   b. inert pair effect
   c. presence of 4*s*-orbital
   d. None of the above

3. The metal which is considered as transition metal, is
   a. zinc  b. cadmium
   c. mercury  d. scandium

4. The ground state electronic configuration of neutral titanium atom is
   a. $[Ar]4s^2 4p^2$  b. $[Ar]3d^2 4s^2$
   c. $[Ar]4s^2 p_x^1 p_y^1$  d. $[Ar]3d^5$

5. Among the following electronic configurations of *d*-orbitals, the electronic configuration showing the highest magnetic moment is
   a. $3d^2$  b. $3d^5$  c. $3d^7$  d. $3d^8$

6. Magnetic moment
   a. increases with increasing number of unpaired electrons
   b. gives indication about the number of unpaired electrons present in the atom, molecule or ion
   c. its unit is Bohr Magneton (BM). A single unpaired electron has 1·73 BM magnetic moment
   d. All of the above

7. Which of the following compounds will show magnetic moment of 1.72 BM?
   a. $[Ni(CN)_4]^{2-}$  b. $[CoCl_6]^{4-}$
   c. $[Cu(NH_3)_4]^{2+}$  d. $TiCl_4$

8. Interstitial compounds are formed when small atoms are trapped inside the crystal lattice of metals. Which of the following are the characteristic properties of interstitial compounds?
   I. They have high melting points in comparison to pure metals.
   II. They are very hard.
   III. They retain metallic conductivity.
   IV. They are chemically very reactive.
   a. I, II and III  b. II, III and IV
   c. I, III and IV  d. I, II and IV

9. The element with maximum number of oxidation states in their compounds is
   a. Eu  b. La  c. Gd  d. Am

10. When Fe metal is rusted, it is
    a. isomerised  b. decomposed
    c. reduced  d. oxidised

11. Ferric sulphate on heating gives
    a. $SO_2$ and $SO_3$  b. $SO_2$
    c. $SO_3$  d. S

12. Iron is rendered passive by treatment with conc.
    a. HCl  b. $H_2SO_4$
    c. $H_3PO_4$  d. $HNO_3$

13. Which of the following is an important ore of iron?
    a. Smaltite  b. Garnierite
    c. Pentalandite  d. Haematite

14. The metal which corrodes readily in moist air, is
    a. gold  b. silver
    c. iron  d. nickel

15. Which one of the following forms of iron can give other forms of iron?
    a. Wrought iron  b. Steel
    c. Pig iron  d. Cast iron

16. The oxidation state of iron in $[Fe(H_2O)_5 NO]^{2+}$ is
    a. 1  b. 2  c. 3  d. 4

17. In weak field ligand, which one of the following cations has maximum magnetic moment?
    a. $Fe^{2+}$  b. $Cu^{2+}$  c. $Ni^{2+}$  d. $Co^{2+}$

18. In the test for nitrate, the composition of brown ring is
    a. $FeSO_4 \cdot N_2O$  b. $FeSO_4 \cdot NO$
    c. $FeSO_4NO_2$  d. $Fe(NO_3)_2$

19. Copper can be extracted from
    a. kupfer nickel  b. dolomite
    c. malachite  d. galena

20. The colour of light absorbed by an aqueous solution of $CuSO_4$ is
    a. orange-red  b. blue-green

21. For the ions, $Cu^{2+}(3d^9)$ and $Cu^{+}(3d^{10})$, the correct statement is
    a. $Cu^{2+}$ is more stable than $Cu^{+}$
    b. $Cu^{2+}$ is less stable than $Cu^{+}$
    c. $Cu^{2+}$ and $Cu^{+}$ ions are equally stable
    d. stability of $Cu^{+}$ and $Cu^{2+}$ depends on the nature of copper salts

22. When $CuSO_4$ reacts with aqueous KI, the products are
a. $Cu_2I_2 + K_2SO_4$ b. $Cu + K_2SO_4 + I_2$
c. $CuI_2 + K_2SO_4$ d. $Cu_2I_2 + K_2SO_4 + I_2$

23. Which of the following is formed, when copper (II) sulphate is treated with excess ammonia?
a. A black precipitate
b. A red precipitate
c. A deep blue solution
d. A white precipitate turning black

24. When copper nitrate is strongly heated, the compound obtained is
a. copper nitrite b. copper
c. copper nitride d. copper oxide

25. Hair dye contains
a. copper nitrate b. gold chloride
c. silver nitrate d. lead nitrate

26. Which of the following ions will finally give a black precipitate with $Ag^+$ ion?
a. $SO_3^{2-}$ b. $Br^-$
c. $CrO_4^{2-}$ d. $S_2O_3^{2-}$

27. In the cyanide extraction process of silver from argentite ore, the oxidising and reducing agent used respectively are
a. $O_2$ and CO b. $O_2$ and Zn dust
c. $HNO_3$ and Zn dust d. $HNO_3$ and CO

28. Turnbull's blue is a compound, called
a. ferricyanide b. ferrous ferrocyanide
c. ferrous cyanide d. ferri ferrocyanide

29. Calomel ($Hg_2Cl_2$) on reaction with ammonium hydroxide gives
a. HgO b. $Hg_2O$
c. $NH_2 - Hg - Hg - Cl$ d. $HgNH_2Cl$

30. Nitriding is the process of surface hardening steel by treating it in an atmosphere of
a. $NH_3$ b. $O_3$
c. $N_2$ d. $H_2S$

31. Potassium dichromate is used
a. in leather industry
b. as an oxidant for the preparation of many azo compounds
c. Both (a) and (b)
d. None of the above

32. The structures of chromate and dichromate ions are *A* and *B* respectively. Here, *A* and *B* refer to
a. *A* - tetrahedral, *B* - octahedral
b. *A* - tetrahedral, *B* - two tetrahedral
c. *A* - octahedral, *B* - two tetrahedral
d. *A* - two octahedral, *B* - octahedral

33. Consider the following statements.
I. Sodium dichromate is less soluble than potassium dichromate.
II. Crystals of potassium dichromate are of orange colour.
III. The chromates and dichromates are interconvertible in aqueous solution depending upon pH of the solution.
IV. The oxidation states of chromate and dichromate are different.

The correct statements are
a. I, II, III and IV b. II and IV
c. I and III d. I and II

34. The photographic industry relies on the special light-sensitive properties of ...I...Here, I refers to
a. AgCl b. AgBr
c. $PdCl_2$ d. either (*a*) or (*b*)

35. What happens when $FeSO_4$ solution reacts with acidified $KMnO_4$ solution?
a. Iron (II) is oxidised b. $KMnO_4$ is oxidised
c. Iron (II) is reduced d. Iron (III) is reduced