1. Which element is having lowest melting and boiling point :
(1) Ti (2) Cu (3) Zn (4) Mn

2. Which of the following set of metals can form alloy:
(1) Cu – Au (2) Li–Na
(3) Fe–Hg (4) All

3. Not more than one oxidation state is show by :
(1) Mn (2) Cr (3) Fe (4) Sc

4. The reaction of O_2 and CO with haemoglobin gives:
(1) Only oxygen-haeme complex
(2) Only CO-haeme complex
(3) Both but oxygen-haeme-complex is more stable
(4) Both but CO-haeme-complex is more stable

5. Iron becomes possive by.....due to formation of..... :
(1) dil. HCl, Fe_2O_3 (2) Aqua-regia, Fe_3O_4
(3) conc. H_2SO_4, Fe_3O_4 (4) conc. HCl, Fe_3O_4

6. $MnO_4^- + xe^- \longrightarrow MnO_4^{2-}$
$+ ye^-$ (Acidic medium) $\longrightarrow Mn^{+2}$
$+ ze^-$ (Natural medium) $\longrightarrow MnO_2$
x, y and z are respectively :
(1) 1, 2, 3 (2) 1, 5, 3 (3) 1, 3, 5 (4) 5, 3, 1

7. In the equation : $M + 8\,CN^- + 2H_2O + O_2 \longrightarrow 4[M(CN)_2]^- + 4OH^-$, metal M is :
(1) Ag (2) Au (3) Cu (4) Hg

8. Amongst CuF_2, $CuCl_2$ and $CuBr_2$:
(1) Only CuF_2 is ionic
(2) Both $CuCl_2$ and $CuBr_2$ are covalent
(3) CuF_2 and $CuCl_2$ are ionic but $CuBr_2$ is covalent
(4) CuF_2, $CuCl_2$ as well as $CuBr_2$ are ionic

9. A metal M which is not affected by strong acids like conc. HNO_3, conc. H_2SO_4 and conc. solution of alkalies like NaOH, KOH forms MCl_3 which finds use for toning in photography. The metal M is :
(1) Ag (2) Hg (3) Au (4) Cu

10. When excess of sodium thiosulphate is added to dil. $AgNO_3$ solution a soluble compound X is formed. However, when dil. $Na_2S_2O_3$ solution is addeed to conc. $AgNO_3$ solution a white ppt. turning yellow and finally black ppt. of Y is obtained. Which is correct pair. :
(1) X is Ag_2S and Y is $Na_3[Ag(S_2O_3)_2]$
(2) X is $Na_3[Ag(S_2O_3)_2]$ and Y is Ag_2S
(3) X is $Ag_2S_2O_3$ and Y is Ag_2S
(4) X is $Ag_2S_2O_3$ and Y is $Na_3[Ag(S_2O_3)_2]$

11. Which of the following ion is not coloured ?
(1) $Ni(DMG)_2$ (2) $[Co(SCN)_4]^{2-}$
(3) $[Fe(H_2O)_5SCN]^{2+}$ (4) $[Al(OH)_4]^-$

12. The total spin and paramagnetism (B.M.) of ferrocyanide ion are respectively :
(1) $0, 2\sqrt{6}$ (2) $5/2, \sqrt{35}$
(3) $2, \sqrt{24}$ (4) $1, 2\sqrt{2}$

13. Which is not correct about $FeO_{0.94}$?
(1) It is non-stoichiometric compound
(2) Some of Fe^{2+} ions get replaced by as many two third Fe^{3+} ions
(3) It is metal excess solid
(4) It is metal deficient solid.

14. The electronic configuration of Cu(II) is $3d^9$ whereas that of Cu(I) is $3d^{10}$. Which of the following is correct?
(1) Cu(II) is more stable
(2) Cu(II) is less stable
(3) Cu(I) and Cu(II) are equally stable
(4) Stability of Cu(I) and Cu(II) depends on nature of copper salts

15. Generally transition elements form coloured salts due to the presence of unpaired electrons. Which of the following compounds will be coloured in solid state?
(1) Ag_2SO_4 (2) CuF_2 (3) ZnF_2 (4) Cu_2Cl_2

16. Which of the following reactions are disproportionation reactions?
(a) $2Cu^+ \rightarrow Cu^{2+} + Cu$
(b) $3MnO_4^{2-} + 4H^+ \rightarrow 2MnO_4^- + MnO_2 + 2H_2O$
(c) $2KMnO_4 \rightarrow K_2MnO_4 + MnO_2 + O_2$
(d) $2MnO_4^- + 3Mn^{2+} + 2H_2O \rightarrow 5MnO_2 + 4H^+$
(1) a, b (2) a, b, c (3) b, c, d (4) a, d

17. Which of the following oxidation state is common for all lanthanoids?
(1) +2 (2) +3 (3) +4 (4) +5

18. There are 14 elements in actinoid series. Which of the following elements does not belong to this series?
(1) U (2) Np (3) Tm (4) Fm

19. Which of the following is amphoteric oxide?
Mn_2O_7, CrO_3, Cr_2O_3, CrO, V_2O_5, V_2O_4
(1) V_2O_5, Cr_2O_3 (2) Mn_2O_7, CrO_3
(3) CrO, V_2O_5 (4) V_2O_5, V_2O_4

20. Interstitial compounds are formed when small atoms are trapped inside the crystal lattice of metals. Which of the following is not the characteristic property of interstitial compounds?
(1) They have high melting points in comparison to pure metals.
(2) They are very hard.
(3) They retain metallic conductivity.
(4) They are chemically very reactive.

21. When acidified $K_2Cr_2O_7$ solution is added to Sn^{2+} salts then Sn^{2+} changes to
(1) Sn (2) Sn^{3+} (3) Sn^{4+} (4) Sn^+

22. Highest oxidation state of manganese in fluoride is +4 (MnF_4) but highest oxidation state in oxides is +7 (Mn_2O_7) because _____.

(1) fluorine is more electronegative than oxygen.

(2) fluorine does not possess d-orbitals.

(3) fluorine stabilises lower oxidation state.

(4) in covalent compounds fluorine can form single bond only while oxygen forms double bond.

23. Although Zirconium belongs to 4d transition series and Hafnium to 5d transition series even then they show similar physical and chemical properties because_____.

(1) both belong to d-block.

(2) both have same number of electrons.

(3) both have similar atomic radius.

(4) both belong to the same group of the periodic table.

24. Why is HCl not used to make the medium acidic in oxidation reactions of $KMnO_4$ in acidic medium?

(1) Both HCl and $KMnO_4$ act as oxidising agents.

(2) $KMnO_4$ oxidises HCl into Cl_2 which is also an oxidising agent.

(3) $KMnO_4$ is a weaker oxidising agent than HCl.

(4) $KMnO_4$ acts as a reducing agent in the presence of HCl.

25. In the form of dichromate, Cr(VI) is a strong oxidising agent in acidic medium but Mo(VI) in MoO_3 and W(VI) in WO_3 are not because _____.

(1) Cr(VI) is more stable than Mo(VI) and W(VI).

(2) Mo(VI) and W(VI) are more stable than Cr(VI).

(3) Higher oxidation states of heavier members of group-6 of transition series are more stable.

(4) Lower oxidation states of heavier members of group-6 of transition series are more stable.

26. Which of the following actinoids show oxidation states upto +7?

(1) Am (2) Pu (3) U (4) Np

27. Which of the following will not act as oxidising agents?

(1) CrO_3 (2) MoO_3 (3) WO_3 (4) CrO_4^{2-}

28. Which of the following lanthanoids show +2 oxidation state besides the characteristic oxidation state +3 of lanthanoids?

(1) Ce (2) Eu (3) Yb (4) Ho

29. Match the property given in Column I with the element given in Column II.

Column I (Property)	**Column II** (Element)
(A) Lanthanoid which shows +4 oxidation state	(i) Pm
(B) Lanthanoid which can show +2 oxidation state	(ii) Ce
(C) Radioactive lanthanoid	(iii) Lu
(D) Lanthanoid which has $4f^7$ electronic configuration in +3 oxidation state	(iv) Eu
(E) Lanthanoid which has $4f^{14}$ electronic configuration in +3 oxidation state	(v) Gd
	(vi) Dy

(1) (A) – ii; (B) – iv; (C) – i; (D) – v; (E) – iii

(2) (A) – i; (B) – ii, iii; (C) – iv; (D) – i, v; (E) – v

(3) (A) – iv; (B) – v; (C) – i, ii; (D) – i; (E) – iii

(4) (A) – i; (B) – iv; (C) – i, ii; (D) – i; (E) – iii

30. Match the properties given in Column I with the metals given in Column II.

Column I (Property)	**Column II** (Metal)
(A) Element with highest second ionisation enthalpy	(i) Co
(B) Element with highest third ionisation enthalpy	(ii) Cr
(C) M in $M(CO)_6$ is	(iii) Cu
(D) Element with highest heat of atomisation	(iv) Zn
	(v) Ni

(1) (A) – iii; (B) – iv; (C) – iii; (D) – i

(2) (A) – i; (B) – iv; (C) – ii; (D) – iii

(3) (A) – ii; (B) – i; (C) – iii; (D) – iv

(4) (A) – iv; (B) – ii; (C) – i; (D) – iii

ANSWER KEY — Exercise-I

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	**3**	**1**	**4**	**4**	**2**	**2**	**2**	**1,2**	**3**	**2**
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	**4**	**3**	**3**	**1**	**2**	**1**	**2**	**3**	**1**	**4**
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	**3**	**4**	**3**	**2**	**2,3**	**2,4**	**2,3**	**2,3**	**1**	**1**