JEE MAIN : CHAPTER WISE TEST-5

SUBJECT :- CHEMISTRY **DATE.....**

CLASS :- 12th **NAME.....**

CHAPTER :- D & F BLOCK **SECTION.....**

(SECTION A)

1. Which of the following atoms does not form interstitial compounds with transition elements ?

(A) C (B) P (C) H (D) N

2. Most common oxidation state of Ce (Cerium) are:

(A) +3, +4 (B) +2, +3
(C) +2, +4 (D) +3, +5

3. The atomic numbers of V,Cr,Mn and Fe are respectively 23,24,25 and 26. Which one of these may be expected to have the highest second ionization enthalpy ?

(A) Cr (B) Mn (C) Fe (D) V

4. Chromium forms most stable compound in the following oxidation state-

(A) Cr (IV) (B) Cr (II)
(C) Cr (III) (D) Cr (V)

5. In the first transition series the melting point of Zn is low, because :-

(A) Metallic bonds are strong due to d^{10} configuration
(B) Metallic bonds are weak due to d^5 configuration
(C) Metallic bonds are weak due to d^7 configuration
(D) d-orbitals have no unpaired electrons

6. From the chromium to nickel, number of bonds:-

(A) Decreases continuously
(B) Increases continuously
(C) Do not change
(D) Increases alternately

7. The actinides showing +7 oxidation state are :

(A) U, Np (B) Pu, Am
(C) Np, Pu (D) None of these

8. Colour of $KMnO_4$ is due to :

(A) d–d transition
(B) charge transfer
(C) f-f transition
(D) None of these

9. Scandium in +3 oxidation state acquires the configuration of which inert gas?

(A) Neon (B) Argon
(C) Krypton (D) Xenon

10. Which of the following transition metal ions is diamagnetic?

(A) Co^{2+} (B) Ni^{2+}
(C) Cu^{2+} (D) Hg^{2+}

11. In the normal conditions the most stable oxidation state of Mn and Cr is :-

(A) Mn^{+2}, Cr^{+3} (B) Mn^{+6}, Cr^{+2}
(C) Mn^{+2}, Cr^{+2} (D) Mn^{+4}, Cr^{+2}

12. CrO_3 is red or orange in colour. The nature of oxide is :-

(A) Acidic (B) Basic
(C) Amphoteric (D) Neutral

13. Cerium (Z = 58) is an important member of the lanthanoide. Which of the following statement about cerium is incorrect?

(A) The common oxidation state of cerium are +3 and +4.
(B) The +3 oxidation state of cerium is more stable than +4 oxidation state.
(C) The +4 oxidation state of cerium is not known in solution.
(D) Cerium (IV) acts as an oxidizing agent.

14. Match the catalysts to the correct processes :

	Catalyst		Process
(P)	$TiCl_3$	(i)	Wacker process
(Q)	$PdCl_2$	(ii)	Ziegler – Natta polymerization
(R)	$CuCl_2$	(iii)	Contact process
(S)	V_2O_5	(iv)	Deacon's process

(A) (P) - (iii), (Q) - (ii), (R) - (iv), (S) - (i)
(B) (P) - (ii), (Q) - (i), (R) - (iv), (S) - (iii)
(C) (P) - (ii), (Q) - (iii), (R) - (iv), (S) - (i)
(D) (P) - (iii), (Q) - (i), (R) - (ii), (S) - (iv)

15. Hybridisation of Mn in KMnO4 is :

(A) sp^3 (B) dsp^2 (C) d^3s (D) sp^2

16. Pick out the correct order :-
(A) Electrical conductivity Ag < Au < Al
(B) Density Hg < Au < Os
(C) Melting point Cr > Mo > W
(D) Atomic size Sc < Ti < V

17. **Statement-I** : The value of enthalpy of atomisation is maximum at about the middle of each series.
Statement-II : There is one unpaired electron per d-orbital and this results in stronger interatomic interaction.
(A) Both Statement-I and Statement-II are correct, and the Statement-II is the correct explanation for the Statement-I.
(B) Both Statement-I and Statement-II are correct, but the Statement-II is not the correct explanation for the Statement-I.
(C) The Statement-I is incorrect, but the Statement-II is correct.
(D) Both Statement-I and Statement-II are incorrect.

18. d- block elements form colored ions because these elements :-
(A) Cannot absorb the radiation in the visible region
(B) Involve d-d transitions which fall in the visible region
(C) Allows d-s transition
(D) Absorb other colours except those required for d-d transition

19. Fe^{+3} is more stable than Fe^{+2}, the reason is/are :
(a) 1st and 2nd I.P. difference is less than 11.0eV
(b) Core of Fe^{+3} is more stable
(c) 2nd and 3rd I.P. difference is less than 11.0eV
(d) I.P. of Fe^{+3} is high
The correct answer is :-
(A) Only a (B) Only b
(C) a b and d (D) b and c

20. Among the following outermost configurations of transition metals, which shows the highest oxidation state?
(A) $3d^3\ 4s^2$ (B) $3d^5\ 4s^1$
(C) $3d^5\ 4s^2$ (D) $3d^6\ 4s^2$

(SECTION B)

21. The magnetic moment of ^{25}Mn in ionic state is 4.83 B.M, then Mn is in state:

22. Percentage of gold in 18 carats gold is :-

23. $KMnO_4$ reacts with Br_2 in alkaline medium to give bromate ion. The oxidation state of Mn changes from +7 to :

24. The ionic radius of Mn^{3+} is 65 pm. The ionic radius of Ni^{3+} will be (in pm):

25. The number of d-electrons retained in Fe^{2+} (At. no. Fe = 26) ions are :

26. When the configuration is d^7 in a transition metal, the paramagnetic susceptibility will be equal to- (in B.M)

27. The maximum oxidation state shown by actinides is :

28. The electron present in penultimate orbit of coinage metal atom are :–

29. The radius of La^{3+} (Atomic number of La = 57) is 1.06Å. Which one of the following given values will be closest to the radius of Lu^{3+} (Atomic number of Lu = 71) ? (in Å)

30. The ''spin-only'' magnetic moment [in units of Bohr magneton, (μB) of Ni^{2+} in aqueous solution would be (atomic number of Ni = 28)