

TEST PAPER NO. 08

TOPIC : D AND F BLOCK ELEMENT

M.M. 50

TIME: 3 HRS.

Name of Student _____ Roll No. _____

Q.NO. 1-10 carries 1 mark, 11-20 2 marks, 21-25 carries 3 marks, 26 carries 5 marks.

1. Why are Mn^{2+} compounds are more stable than Fe^{3+} towards oxidation to their +3 state?
2. What are the different oxidation state exhibited by Lanthanoids?
3. Compare the stability of +2 oxidation state for the elements of first series.
4. Which metal in the first transition metals exhibits +1 oxidation state most frequently and why?
5. Name a lathanoid series element exhibiting +4 oxidation state?
6. Actinoid contraction is greater from element to element than lanthanoid contraction. Why?
7. What are misch metal?
8. Explain why Cu^+ ion is not stable in aqueous solutions?
9. Calculate the spin only magnetic moment of $M^{2+}_{(aq)}$ ion ($Z = 27$)
10. Which is the stronger reducing agent and why Cr^{2+} or Fe^{2+} ?
11. What is disproportionation reaction? Explain with two example.
12. a. How would you account for the increasing oxidising power $VO_2^+ < CrO_7^{2-} < MnO_4^-$
b. How would you account for irregular variation of IE in I^{st} transition series.
13. Why transition element show magnetic behaviour. Calculate the magnetic moment of a divalent ion in aqueous solution if its $Z = 25$.
14. What is lanthanoid contraction. Explain its consequences. (any two)
15. Why:
 - a. Transition element have high enthalpy of atomisation
 - b. Transition element show variable oxidation state.
16. Why:
 - a. Transition element have irregular variation in atomic radii along the series.
 - b. Zn, Cd and Hg are not considered as transition element.
17. Give example and suggest reasons for the following features of the transition element:
 - a. The lowest oxide of transition metal is basic, the highest is amphoteric/acidic
 - b. The highest oxidation state is exhibited in oxoanions.
18. Why
 - a. A transition metall exhibits highest oxidation state in oxides and fluorides.
 - b. +2 state becomes more and more stable in the first half of the first row transition elements with increasing atomic number.

19. Write the ionic equation for action of acidified potassium dichromate on:
a. iron(II) solution b. H_2S
20. Explain the :
a. For the 1st row transition metals the value of E° are irregular.
b. Cr^{4+} reducing and Mn^{3+} oxidising when both have d^4 configuration.
21. Write general electronic configuration of d and f block element
Why Cr and Cu have anomalous configuration.
22. Write:
a. Chromyl Chloride Test Reaction
b. Effect of change of pH on Potassium Dichromate
c. Action of neutral KMnO_4 on thiosulfate
23. Compare the chemistry of actinoids with that of the lanthanoids with special reference to:
a. Electronic configuration b. Oxidation State
c. Atomic and ionic sizes d. Chemical reactivity
Why: Cobalt (II) is stable in aqueous solution but in the presence of complexing reagents it is easily oxidised.
24. Explain $\text{K}_2\text{Cr}_2\text{O}_7$ under following head:
a. Preparation
b. Action of KMnO_4 (acidified) on Ferrous Sulfate and Potassium Iodide.
Write balanced chemical reaction.
25. Explain KMnO_4 under following head:
a. Preparation
b. Action of KMnO_4 (acidified) on Ferrous Sulfate and Potassium Iodide.
Write balanced chemical reaction.
c. Structure and 2 uses.
26. Explain the following property of transition element:
a. Coloured compound
b. Interstitial compound
c. Complex compound
d. Catalyst
e. Alloy formation.