



CBSE NCERT Based Chapter wise Questions (2025-2026)

Class-XII

Subject: CHEMISTRY

Chapter Name : 'd' & 'f' Block elements

Total : 5 Marks (expected) [MCQ(1)-1 Mark, VSA-(2)-1 Marks, SA(1)-3 Marks]

Level - 2 (Higher Order)

Section - A

(I) MCQ Type : (Once Correct Answer)

1. Which of the following is a strong oxidising agent ?

(At No. Mn = 25, Zn = 30, Cr = 24, Sc = 21)

- (A) Mn^{3+} (B) Zn^{2+} (C) Cr^{3+} (D) Sc^{3+}

(Hints : Mn^{3+} will gain – one electron to form $\text{Mn}^{2+}(3d^5)$, which is more stable. [CBSE 2021 (C)])

2. In which of the following pairs both the ions are coloured in aqueous solution.

(At - No of Sc = 21, Ti = 22, Ni = 28, Co = 27, Cu = 29)

- (A) Sc^{3+} , Ti (B) Sc^{3+} , Co^{2+} (C) Ni^{2+} , Cu^+ (D) Ni^{2+} , Ti^{3+}

(Hints : Colour arises due to unpaired electrons)

3. Which of the following is most stable in aqueous solution?

- (A) Mn^{2+} (B) Cr^{3+} (C) V^{3+} (D) Ti^{3+}

(Hints : t_{2g}^3 (half filled p-orbitals) are more stable.

4. Which of the following pairs has the same ionic size ?

- (A) Zr^{4+} , Hf^{4+} (B) Zn^{2+} , Hf^{4+} (C) Fe^{2+} , Ni^{2+} (D) Zr^{4+} , Ti^{4+}

(Hints : Zr^{4+} & Hf^{4+} have similar size)

5. Magnetic moment of 2.83 BM is given by which of the following ion ?

- (A) Ti^{3+} (B) Ni^{2+} (C) Cr^{2+} (D) Mn^{2+}

(Hints : $\mu = \sqrt{n(n+2)}$)

(II) VSA Type :

6. Account for the following : Transition metals form large number of complex compounds.

(Hints : CBSE, 2020)

7. Account for the following copper (I) Compounds are white where as copper (II) compounds are coloured.

(Hints : CBSE, 2020))

8. Give reason : Mn^{2+} is much more resistant than Fe^{2+} towards oxidation.

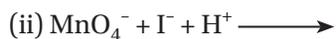
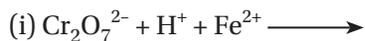
(Hints : CBSE sample paper 2018)

(III) Short Answer Question (LA) :

9. Transition metals can act as a catalyst, why? How does Fe(III) catalyst the reaction between iodide ion and persulphate ions? Mention any three process where transition metals act as a catalysts.

(Hints : CBSE, 2023)

10. (a) Complete the following chemical equation for reaction in aqueous media :



(b) How many unpaired electron are present in Mn^{2+} (ion At. No. of Mn = 25). How does it influence magnetic between at Mn^{2+} .

(Hints : (a) CBSE : 2020 ; (b) CBSE : 2023)

11. (i) On what ground can you say that scandium ($Z = 21$) is a transition element but Zinc ($Z = 30$) is not.

(ii) Ni (II) Compounds are thermodynamically more stable than Pt (II) compounds. Why ?

(Hints : CBSE 2022)

ANSWER

1. (A)
2. (D)
3. (B)
4. (A)
5. (B)

