B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL

Pre-MidTerm-Test 2025-26

Class : XII
Date : 05/8/2025
Admission No.:

CHEMISTRY (043)

Duration: 1 Hr
Max. Marks: 25
Roll No.:

General Instructions:

(i) There are 13 questions in all. All questions are compulsory.
(ii) This question paper has three sections: Section A, Section B and Section C.
(iii) All the sections are compulsory.
(iv) Section A contains five questions of 1 mark each, out of which one question is assertion and reasoning type question.
(v) Section B contains four questions of two marks each, Section C contains four questions of three marks each.
(vi) There is no overall choice. Use of calculators is not allowed.

SECTION-A

1. Which of the following has the maximum number of unpaired electrons? 1
(a) Mn^{2+} (b) Sc^{3+} (c) V^{3+} (d) Cr^{2+}

2 . The transition metals shows property of 1
(a) variable oxidation states. (b) tendency to form complexes.
(c) formation of coloured compounds. (d) all of these.

3. Primary and secondary valency of Co in $[Co(ox)_2Cl_2]\ NO_3$ are 1
(a) 4, 1 (b) 1, 6 (c) 6, 1 (d) 1, 4

4. The complex ions $[Co(NH_3)_5(SCN)]^{2+}$ and $[Co(NH_3)_5\ (NCS)]^{2+}$ are called 1
(a) Ionization isomers (b) Linkage isomers
(c) Co-ordination isomers (d) Geometrical isomers

5. These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses. 1

(a) Both Assertion and reason are true and reason is correct explanation of assertion.
(b) Assertion and reason both are true but reason is not the correct explanation of assertion.
(c) Assertion is true, reason is false.
(d) Assertion is false, reason is true.

Statement: : Lanthanide contraction is greater from element to element than actinoid contraction.
Reason: Actinoids have 5f orbitals being filled which are more dispersed in space compare to 4f orbitals.

SECTION – B

6. (i) Zinc atom has completely filled *d* orbitals ($3d^{10}$) in its ground state.
How can you say that it is a transition element? 2
(ii) Why do the transition elements exhibit higher enthalpies of atomisation?
7. (i) The transition elements generally form coloured compounds. Why? 2
(ii) What is Lanthanoid contration?
8. Differentiate Homoleptic and heteroleptic complexes with examples. 2
9. Write the IUPAC name of the following.

(i) $[Co(NH_3)_4(H_2O)\ Cl]Cl_2$ (ii) $K_2\ [Zn(OH)_4]$ 2

SECTION C

10. Draw the structure of (i) MnO_4^{1-} (ii) $Cr_2O_7^{2-}$ (iii) CrO_4^{1-} 3
11. Describe the oxidising action of potassium dichromate and write the ionic equations for its reaction with:
(i) Fe^{2+} (ii) Sn^{2+} (iii) S^{2-} 3
12. Explain nature of bonding in the following compound on the basis of VBT. (Fe=26) 3

$[Fe(CN)_6]^{4-}$

13. On the basis of the following observations made with aqueous solutions, assign Primary and secondary valences to metals in the following compounds: 3

Formula	Moles of AgCl precipitated per mole of the compounds with excess $AgNO_3$
(i) $PdCl_2.4NH_3$	2
(ii) $NiCl_2.6H_2O$	2
(iii) $PtCl_5.2NH_3$	1
(iv) $CoCl_3.4NH_3$	1
(v) $PtCl_2.2NH_3$	0

----------ALL THE BEST----------