



# BK BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS  
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL

Pre-MidTerm-Test 2024-25

CHEMISTRY (043)



Class : XII

Date : 31 /7/2024

Admission No.:

Duration: 1 Hr

Max. Marks: 25

Roll No.:

## General Instructions:

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

## SECTION-A

- Which of the following has the maximum number of unpaired electrons? 1  
(a)  $Mg^{2+}$  (b)  $Ti^{3+}$  (c)  $V^{3+}$  (d)  $Fe^{2+}$
- The property which is not characteristic of transition metals is 1  
(a) variable oxidation states. (b) tendency to form complexes.  
(c) formation of coloured compounds. (d) natural radioactivity.
- Primary and secondary valency of Pt in  $[Pt(en)_2Cl_2]$  are 1  
(a) 4, 4 (b) 0, 6 (c) 6, 4 (d) 0, 4
- The complex ions  $[Co(NH_3)_5(NO_2)]^{2+}$  and  $[Co(NH_3)_5(ONO)]^{2+}$  are called 1  
(a) Ionization isomers (b) Linkage isomers  
(c) Co-ordination isomers (d) Geometrical isomers
- 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 more than actinoid contraction.

**Reason:** Actinoids have 5f orbitals being filled which are more dispersed in space compare to 4f orbitals.

### SECTION – B

6. (i) Silver atom has completely filled  $d$  orbitals ( $4d^{10}$ ) 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) In the series Sc ( $Z = 21$ ) to Zn ( $Z = 30$ ), the enthalpy of atomisation of zinc is the lowest, i.e.,  $126 \text{ kJ mol}^{-1}$ . Why? 2  
(ii) Which of the  $3d$  series of the transition metals exhibits the largest number of oxidation states and why?
8. Differentiate Homoleptic and heteroleptic complexes with examples. 2
9. Draw figure to show the splitting of  $d$  orbitals in an octahedral crystal field. 2

### SECTION C

10. Describe the preparation of potassium dichromate from iron chromite ore. What is the effect of increasing pH on a solution of potassium dichromate? 3
11. Describe the oxidising action of potassium dichromate and write the ionic equations for its reaction with: (i) iodide (ii) iron(II) solution and (iii)  $\text{H}_2\text{S}$  3
12. Write the IUPAC names of the following coordination compounds: 3  
(a)  $[\text{Pt}(\text{NH}_3)_2\text{Cl}(\text{NO}_2)]$  (b)  $\text{K}_3[\text{Cr}(\text{C}_2\text{O}_4)_3]$  (c)  $[\text{CoCl}_2(\text{en})_2]\text{Cl}$
13. On the basis of the following observations made with aqueous solutions, assign secondary valences to metals in the following compounds: 3

Formula	Moles of AgCl precipitated per mole of the compounds with excess $\text{AgNO}_3$
(i) $\text{PdCl}_2 \cdot 4\text{NH}_3$	2
(ii) $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$	2
(iii) $\text{PtCl}_4 \cdot 2\text{HCl}$	0
(iv) $\text{CoCl}_3 \cdot 4\text{NH}_3$	1
(v) $\text{PtCl}_2 \cdot 2\text{NH}_3$	0

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