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REVISION PAPER CHEMISTRY
UNIT- VIII (D- & F- BLOCK ELEMENTS)

Subject: Chemistry

Class: XII

Time: 1 Hour

Max. Marks: 20

Note: There are **09** questions in this question paper with internal choice. Q. No. 1-2 consists of multiple-choice questions carrying 1 mark each. Q. No. 3-4 consists of Assertion and Reason questions carrying 1 mark each. Q. No. 5-6 consists of very short answer questions carrying 2 marks each. Q. No. 7 consists of short answer questions carrying 3 marks each. Q. No. 8 consists of case- based questions carrying 4 (1+1+1+1) marks. Q. No. 9 consists of long answer questions carrying 5 marks each.

S.No.	Questions	Marks
1.	The colour of transition metal compounds is due to (a) Complete ns-subshells (b) small size of metal ions (c) incomplete (n-1) d subshells (d) absorption of light in UV region.	1
2.	The correct order of number of unpaired electrons is (a) $\text{Cu}^{2+} > \text{Ni}^{2+} > \text{Cr}^{3+} > \text{Fe}^{3+}$ (b) $\text{Ni}^{2+} > \text{Cu}^{2+} > \text{Fe}^{3+} > \text{Cr}^{3+}$ (c) $\text{Fe}^{3+} > \text{Cr}^{3+} > \text{Ni}^{2+} > \text{Cu}^{2+}$ (d) $\text{Cr}^{3+} > \text{Fe}^{3+} > \text{Ni}^{2+} > \text{Cu}^{2+}$	1
	In the following questions one mark each (Q. No. 3-4) a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct answer out of the following choices. (i) A and R both are correct statements and R is the correct explanation for A. (ii) A and R both are correct statements and R is not correct explanation for A. (iii) A is correct statement but R is wrong statement. (iv) A is wrong statement but R is correct statement.	
3.	Assertion (A): The correct order of oxidising power is $\text{VO}_2^+ < \text{Cr}_2\text{O}_7^{2-} < \text{MnO}_4^-$ Reason (R): The oxidation state of Mn in MnO_4^- is +7.	1
4.	Assertion (A): Cu^{2+} iodide is not known. Reason (R): Cu^{2+} oxidises I ⁻ to iodine.	1
5.	What is lanthanoid contraction? What are its two consequences? OR (a) Why is europium(II) being more stable than cerium (II)? (b) Transition elements show high melting points. Why?	2
6.	Write the balanced chemical equations involved in the KMnO_4 from pyrolusite ore (MnO_2).	2
7.	Explain the following observation: (i) La^{3+} and Lu^{3+} do not show any colour in solution. (ii) Ce (III) is easily oxidised to Ce (IV). (iii) What would happen if lanthanoid elements are treated with carbon? OR Explain the method of preparation of sodium dichromate from chromite ore. Give the equation representing oxidation of ferrous salts by dichromate ion.	3
8.	Case study-based questions The transition elements have incompletely filled d-subshells in their ground state or in any of their oxidation states. The transition elements occupy position in between s- and	4

	<p>p- blocks in groups 3 – 12 of the periodic table. There are mainly three series of the transition metals. 3d series (Sc to Zn), 4d series (Y to Cd) and 5d series (La to Hg, omitting Ce to Lu). The fourth 6d series (Ac to Cn, omitting Th to Lr). In general. The electronic configuration of outer orbitals of these elements is $(n-1)d^{1-10} ns^{1-2}$. The very name ‘transition’ given to the elements of d-block is only because of their position between s- and p-block elements. All the transition elements have typical metallic properties such as high tensile strength, ductility, malleability. Except mercury, which is liquid at room temperature, other transition elements have typical metallic structures. The transition metals and their compounds also exhibit catalytic property and paramagnetic behaviour. Transition metals also form alloys. An alloy is a blend of metals prepared by mixing the components. Alloys may be homogeneous solid solutions in which the atoms of one metal are distributed randomly among the atoms of the other.</p> <p>The following questions are multiple choice questions. Choose the most appropriate answer.</p> <p>(i) Which of the following characteristics of transition metals is associated with higher catalytic activity? (a) High enthalpy of atomisation (b) Variable oxidation state (c) Paramagnetic behaviour (d) Colour of hydrated ions</p> <p>(ii) Transition elements form alloys easily because they have (a) Same atomic number (b) same electronic configuration (c) nearly same atomic size (d) same oxidation state</p> <p>(iii) The electronic configuration of [Lutetium] (Lu) is (a) $[Xe] 4f^0 5d^1 6s^2$ (b) $[Xe] 4f^{14} 5d^1 6s^2$ (c) $[Xe] 4f^{14} 5d^3 6s^2$ (d) $[Xe] 4f^{14} 5d^4 6s^2$</p> <p>(iv) Which one of the following outer orbital configurations may exhibit the largest number of oxidation states? (a) $3d^5 4s^1$ (b) $3d^5 4s^2$ (c) $3d^2 4s^2$ (d) $3d^3 4s^2$</p> <p>OR</p> <p>The correct statement(s) among the following is/are</p> <p>(i) All d-block elements are metals. (ii) All d-block elements form coloured ions. (iii) All d-block elements show paramagnetic behavior. (a) (i) only (b) (i) and (ii) only (c) (ii) and (iii) only (d) (i), (ii) and (iii)</p>	
9.	<p>The elements of 3d transition series are given as: Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn</p> <p>Answer the following:</p> <p>(i) Which element has highest melting point? (ii) Which elements have less negative E^0 value than that of Cr? (iii) Which element is not considered as transition element? (iv) Which element shows maximum oxidation state +6? (v) Which element is a strong reducing agent in +2 oxidation state</p> <p>OR</p> <p>How would you account for the following:</p> <p>(i) Among lanthanoids, Ln (III) compounds are predominant. However, occasionally in solutions or in solid compounds, +2 and +4 ions are also obtained. (ii) There is a gradual decrease in the size of atoms with increasing atomic number in the series of lanthanoids.</p>	5