SILVER HILLS PUBLIC SCHOOL

Affiliated to CBSE, Delhi, Affiliation No. 930433, Code No. 75439

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CYCLIC TEST 3 – 2024-25

Name			**Subject: Chemistry**	**Maximum Marks: 25**
Class: XI	**Section:**	**Roll No.**	**Duration: 1 Hr.**	**Date:**

General Instructions:

(a) All questions are compulsory. There are 15 questions in total.
(b) Section A consists of 8 multiple choice questions carrying 1 mark each.
(c) Section B consists of 4 very short answer questions carrying 2marks each.
(d) Section C consists of 3 short answer questions carrying 3 marks each.

Following questions (Nos. 1- 8) are multiple choice questions carrying 1 mark each:

1. The oxidation number of Cr in $Cr(CO)_6$ is ——————

   (a) zero (b) +2

   (c) -2 (d) +6

2. **In the reaction**

   $3Br_2 + 6CO_3^{2-} + 3H_2O \rightarrow 5Br^- + BrO_3^- + 6HCO_3^-$

   (a) Bromine is oxidised and carbonate is reduced.

   (b) Bromine is reduced and water is oxidised

   (c) Bromine is neither reduced nor oxidised.

   (d) Bromine is both reduced and oxidised.

3. Consider the following reaction:

   $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$

   With reference to the above, which one of the following

is the correct statement?

(a) Zn is reduced to Zn^{2+} ions.

(b) Zn is oxidised to Zn^{2+} ions.

(c) Zn^{2+} ions are oxidised to Zn.

(d) Cu^{2+} ions are oxidized to Cu.

4. Oxidation number of P in PO_4^{3-}, of S in SO_4^{2-} and that of Cr in $Cr_2O_7^{2-}$ are respectively:

(a) +3, +6 and +5

(b) +5, +3 and +6

(c) +3, +6 and +6

(d) +5, +6 and +6

5. The IUPAC name of CH_3CHO is:

(a) Acetaldehyde

(b) Methylaldehyde

(c) Formyl chloride

(d) Ethanal

6. The structure of 4-Methylpent-2-en-1-ol is:

(a) $CH_3CH_2CH=CHCH_2OH$

(b) $(CH_3)_2C=CHCH_2CH_2OH$

(c) $(CH_3)_2CHCH=CHCH_2OH$

(d) $CH_3CH(OH)CH-CH=C(CH_3)_2$

In these questions, a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

a) Assertion and reason both are correct statements and reason is correct explanation for assertion.

b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.

c) Assertion is correct statement but reason is wrong statement.

d) Assertion is wrong statement but reason is correct statement.

7. **Assertion :** In a reaction

$Zn(s) + CuSO4\ (aq) \rightarrow ZnSO_4(aq) + Cu(s)$

Zn is a reductant but itself get oxidized.

Reason: In a redox reaction, oxidant is reduced by accepting electrons and reductant is oxidized by losing electrons.

8. **Assertion**: Chain isomerism is observed in compounds containing four or more than four carbon atoms

Reason: Only alkanes show chain isomerism

SECTION - B

The following questions (Q. Nos. 9- 12) are short answer type and carry 2 marks each.

9. What are hybridisation states of each carbon atom in the following compounds?

$CH_2=C=O$, $CH_3CH=CH2$, $(CH_3)_2CO$, $CH_2=CHCN$, C_6H_6.

10. Write bond-line formulas for: 2,3-Dimethylbutanal, Heptan-4-one.

11. Calculate the oxidation number of each sulphur atom in the following compounds:

(a) $Na_2S_2O_3$

(b) $Na_2S_4O_6$

(c) Na_2SO_3

(d) Na_2SO_4

12 . Justify that the following reactions are redox reactions:

(a) $CuO(s) + H_2(g) \longrightarrow Cu(s) + H_20(g)$

(b) $Fe_2O_3(s) + 3CO(g) \longrightarrow 2Fe(s) + 3CO_2(g)$

(c) $4BCl_3(g) + 3LiAlH_4(s) \longrightarrow 2B_2H_6(g) + 3LiCl(s) + 3AlCl_3(s)$

SECTION - C

Questions 13- 15 are short answer type II carrying 3 marks each

13. Balance the following equations by the oxidation number method.

(i) $Fe^{2+} + H^+ + Cr_2O_7^{2-} \longrightarrow Cr^{3+} + Fe^{3+} + H_2O$

(ii) $I_2 + NO_3^- \longrightarrow NO_2 + IO_3^-$

(iii) $I_2 + S_2O_3^{2-} \longrightarrow I^- + S_4O_6^{2-}$

(iv) $MnO_2 + C_2O_4^{2-} \longrightarrow Mn^{2+} + CO_2$

14. In the reactions given below, identify the species undergoing oxidation and reduction:

(i) $H_2S\ (g) + Cl_2\ (g) \rightarrow 2\ HCl\ (g) + S\ (s)$

(ii) $3Fe_3O_4$ (s) + 8 Al (s) → 9 Fe (s) + $4Al_2O_3$ (s)

(iii) 2 Na (s) + H_2 (g) → 2 NaH (s)

15. Permanganate(VII) ion, MnO_4^- in basic solution oxidises iodide ion, I^- to produce molecular iodine (I_2) and manganese (IV) oxide (MnO_2). Write a balanced ionic equation to represent this redox reaction.