JEE MAIN : CHAPTER WISE TEST PAPER-8

SUBJECT :- CHEMISTRY **DATE.....**
CLASS :- 11th **NAME.....**
CHAPTER :- REDOX REACTION **SECTION.....**

(SECTION-A)

1. Which of the following acts as both oxidant and reductant ?
(A) HNO_3
(B) HNO_2
(C) Both HNO_3 & HNO_2
(D) Neither HNO_3 nor HNO_2

2. State which of the following reactions is neither oxidation nor reduction ?
(A) $Na \rightarrow NaOH$
(B) $Cl_2 \rightarrow Cl^- + ClO_3^-$
(C) $P_2O_5 \rightarrow H_4P_2O_7$
(D) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

3. In the reaction
$C_2O_4^{-2} + MnO^-_4 + H^+ \rightarrow Mn^{+2} + CO_2$
the reductants is –
(A) $C_2O_4^{-2}$ (B) H^+
(C) MnO^-_4 (D) None of the above

4. The order of increasing O.N. of S in $S_8, S_2O_8^{-2}, S_2O_3^{-2}, S_4O_6^{-2}$ is given below –
(A) $S_8 < S_2O_8^{-2} < S_2O_3^{-2} < S_4O_6^{-2}$
(B) $S_2O_8^{-2} < S_2O_3^{-2} < S_4O_6^{-2} < S_8$
(C) $S_2O_8^{-2} < S_8 < S_4O_6^{-2} < S_2O_3^{-2}$
(D) $S_8 < S_2O_3^{-2} < S_4O_6^{-2} < S_2O_8^{-2}$

5. In the redox reaction –
$10FeC_2O_4 + x\,KMnO_4 + 24H_2SO_4 \rightarrow 5Fe_2(SO_4)_3 + 20CO_2 + y\,MnSO_4 + 3\,K_2SO_4 + 24H_2O$.
The values of x and y are respectively –
(A) 6, 3 (B) 3, 6
(C) 3, 3 (D) 6, 6

6. Which of the following is correctly balanced half reaction ?
(A) $AsO_3^{-3} + H_2O \rightarrow AsO_4^{-3} + 2H^+ - 2e^-$
(B) $H_2O_2 + 2e^- \rightarrow O_2 + 2H^+$
(C) $Cr_2O_7^{-2} + 14H^+ \rightarrow 2Cr^{+3} + 7H_2O - 6e^-$
(D) $IO^-_3 + 6H^+ \rightarrow I_2 + 3H_2O + 5e^-$

7. In acting as a reducing agent, a piece of metal M weighing 16 g gives up 2.25×10^{23} electrons, what is the equivalent weight of the metal ?
(A) 42.83 (B) 21.33 (C) 83.32 (D) 32

8. Which one of the following is a redox reaction ?
(A) $H_2 + Br_2 \rightarrow 2HBr$
(B) $2NaCl + H_2SO_4 \rightarrow Na_2SO_4 + 2HCl$
(C) $HCl + AgNO_3 \rightarrow AgCl + HNO_3$
(D) $NaOH + HCl \rightarrow NaCl + H_2O$

9. According to classical concept, oxidation involves
(A) Addition of oxygen
(B) Addition of electronegative element
(C) Removal of either hydrogen or some electropositive element
(D) All of these

10. In the reaction
$MnO_4^- + SO_3^{2-} + H^+ \longrightarrow SO_4^{2-} + Mn^{2+} + H_2O$
(A) MnO_4^- and H^+ both are reduced
(B) MnO_4^- is reduced and H^+ is oxidised
(C) MnO_4^- is reduced and SO_3^{2-} is oxidised
(D) MnO_4^- is oxidised and SO_3^{2-} is reduced

11. The compound in which oxidation state of metal is zero-
(A) $Fe_2(CO)_9$ (B) Ni $(CO)_4$
(C) $Fe_3(CO)_9$ (D) All the above

12. Which of the following is a disproportionation reaction ?
(A) $Cu_2O + 2H^+ \rightarrow Cu + Cu^{2+} + H_2O$
(B) $2CrO_4^{-2} + 2H^+ \rightarrow Cr_2O_7^{-2} + H_2O$
(C) $CaCO_3 + 2H^+ \rightarrow Ca^{2+} + H_2O + CO_2$
(D) $Cr_2O_7^{-2} + 2OH^- \rightarrow 2CrO_4^{-2} + H_2O$

13. In the chemical reaction,
$K_2Cr_2O_7 + XH_2SO_4 + YSO_2 \rightarrow K_2SO_4 + Cr_2(SO_4)_3 + ZH_2O$
X, Y and Z are –
(A) 1, 3, 1 (B) 4, 1, 4
(C) 3, 2, 3 (D) 2, 1, 2

14. $Cu + X \longrightarrow Cu(NO_3)_2 + 2H_2O + 2NO_2$. Here X is-
(A) $4HNO_3$ (B) $2HNO_3$
(C) $4HNO_2$ (D) $6HNO_3$

15. Which of the following equations is a balanced one ?

(A) $5BiO_3^- + 22H^+ + Mn^{2+} \rightarrow 5Bi^{3+} + 7H_2O + MnO_4^-$

(B) $5BiO_3^- + 14H^+ + Mn^{2+} \rightarrow 5Bi^{3+} + 7H_2O + 2MnO_4^-$

(C) $2BiO_3^- + 4H^+ + Mn^{2+} \rightarrow 2Bi^{3+} + 2H_2O + MnO_4^-$

(D) $6BiO_3^- + 12H^+ + 3Mn^{2+} \rightarrow 6Bi^{3+} + 6H_2O + 3MnO_4^-$

16. What is the equivalent weight of NH3 in the given reaction ?

$3CuO + 2NH_3 \rightarrow 3Cu + N_2 + 3H_2O$

(A) 17 (B) $\frac{17}{4}$ (C) $\frac{17}{2}$ (D) $\frac{17}{3}$

17. The mass of gas obtained when 1.5×10^{-3} moles of MnO_4^- oxidised 1.2 mg of H_2O_2 in acidic medium is-

(A) 2.2 mg (B) 1.12 mg
(C) 3.2 mg (D) 0.56 mg

18. In which of the following reaction (s) H_2SO_4 act as an oxidising agent and as well as acid ?

(A) $C_{12}H_{22}O_{11} \xrightarrow{H_2SO_4} 12C + 11H_2O$

(B) $S + 2H_2SO_4 \longrightarrow 3SO_2 + 2H_2O$

(C) $Cu + 2H_2SO_4 \longrightarrow CuSO_4 + SO_2 + 2H_2O$

(D) All of the above

19. In a reaction $H_2O + C \longrightarrow CO + H_2$

(A) H_2O is the reducing agent
(B) H_2O is the oxidising agent
(C) Carbon is the oxidising agent
(D) Oxidation-reaction does not occurs

20. The reaction, $3ClO^-(aq) \rightarrow ClO_3^-(aq) + 2Cl^-(aq)$ is an example of -

(A) oxidation reaction
(B) reduction reaction
(C) disproportionation reaction
(D) decomposition reaction

(SECTION-B)

21. The oxidation number of S in $H_2S_2O_8$ is –

22. In the reaction $Al + Fe_3O_4 \rightarrow Al_2O_3 + Fe$ – what is the total no. of electrons transferred during the change ?

23. What weight of HNO_3 is needed to convert 62 g of P_4 in H_3PO_4 in the reaction ?

$P_4 + HNO_3 \longrightarrow H_3PO_4 + NO_2 + H_2O$

24. The equivalent weight of an element is 9. If it forms volatile chloride of vapour density 58.5. What is the approximate at wt. of the element ?

25. The oxidation number of phosphorus in $Ba(H_2PO_2)_2$ is-

26. Oxidation number of Ni in $Ni(CO)_4$ is-

27. The oxidation number of nitrogen in NH_2OH is-

28. Equivalent weight of oxidising agent will be-

$2H_2 + O_2 \rightarrow 2H_2O$

29. Calculate the equilibrium constant at 25ºC for the disproportionation of 3 mol aqueous HNO_2 to yield gaseous NO and aqueous NO_3^-. The standard potential for the reduction of HNO_2 to NO is 0.99 V that for reduction of NO_3^- to HNO_2 is 0.94 V.

30. The charge on cobalt in $[Co(CN)_6]^{3-}$ is -