Shiksha Classes Bhandara

Subject : Chemistry   **Topic : Redox Reaction**   **M.M. : 100**

Marking Scheme:

(i) Each question is allotted 4 (four) marks for each correct response.

(ii) ¼ (one fourth) marks will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the answer sheet.

Q.1 The equivalent wt. of the salt $KHC_2O_4 \cdot H_2C_2O_4 \cdot 4H_2O$ (to be used as a reducing agent) is-

(A) $\dfrac{Mol.\ wt.}{1}$ (B) $\dfrac{Mol.\ wt.}{2}$

(C) $\dfrac{Mol.\ wt.}{3}$ (D) $\dfrac{Mol.\ wt.}{4}$

Q.2 Solvated electrons are produced by the reaction of
(A) Sodium metal with alcohol
(B) Sodium metal in liquid ammonia
(C) Sodium metal with liquid hydrogen fluoride
(D) Sodium metal with pyridine

Q.3 The half-cell potentials for the metallic elements A, B, C and D are 0.8V, –0.74V, 1.1V and +0.34V respectively. Arrange these in the order of decreasing metallic character–
(A) B > D > A > C   (B) B > D > C > A
(C) D > B > A > C   (D) B > A > D > C

Q.4 The oxidation number of Pt in $[Pt\,(C_2H_5)Cl_3]$ is-
(A) +1   (B) +2
(C) +3   (D) + 4

Q.5 Oxidation number of cobalt in $[Co(NH_3)_6]\,Cl_2\,Br$ is -
(1) + 6   (2) Zero
(3) + 3   (4) + 2

Q.6 In acting as a reducing agent, a piece of metal M weighing 16 grams 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

Q.7 What volume of H_2 at NTP is needed to reduce 125 gm of MoO_3 to metal ?
(A) 28.33 lit   (B) 58.33 lit.
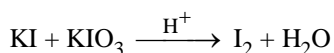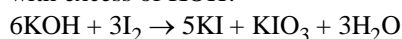(C) 68.675 lit   (D) 68.95 lit.

Q.8 The volume equivalent of CO_2 in the reaction
$NaHCO_3 + HCl \rightarrow NaCl + H_2O + CO_2$ at NTP is-
(A) 22.4 litres   (B) 112 litres
(C) 11.2 litres   (D) 5.6 litres

Q.9 The oxid. no. of Cl in $NOClO_4$ is -
(A) + 11   (B) + 9
(C) + 7   (D) + 5

Q.10 How many moles of KI are oxidized by number of moles of KIO_3 formed when 1 mol of I_2 is boiled with excess of KOH?
$6KOH + 3I_2 \rightarrow 5KI + KIO_3 + 3H_2O$

$KI + KIO_3 \xrightarrow{\ H^+\ } I_2 + H_2O$
(A) 1/2   (B) 1/5

(C) 1/3   (D) 1/4

Q.11 Given : $E^{\circ}_{Zn^{2+}/Zn} = -0.76V$, $E^{\circ}_{Ag^+/Ag} = 0.80V$

$E^{\circ}_{Fe^{3+},Fe^{2+}/Pt} = 0.77V$ and $E^{\circ}_{Br_2/Br^-} = 1.09V$

Choose the correct statement –
(A) Zinc can react with 1M H_2SO_4, whereas silver cannot.
(B) Br_2 can oxidise Fe^{2+} to Fe^{3+}.
(C) Both are correct
(D) Both are incorrect

Q.12 The coefficients X, Y, Z in the balanced equation relating to the oxidation of Na_2S by $KMnO_4$ according to $X\ Na_2S + Y\ KMnO_4 + Z\ H_2O$
$\rightarrow MnO_2 + NaOH + KOH + S$ are-
(A) X = 4, Y = 2, Z = 2   (B) X = 2, Y = 4, Z = 3
(C) X = 3, Y = 2, Z = 4   (D) X = 4, Y = 2, Z = 3

Q.13 What is the oxidation number of Pb in Pb_3O_4 ?
(A) 1/8   (B) 3/8
(C) 1/4   (D) 1/2

Q.14 Arrange in molecules, NH_3, NO_2, HN_3, NO_2^- and N_2H_4 in the decreasing order of the oxidation state of nitrogen –
(A) $NO_2 > NO_2^- > HN_3 > N_2H_4 > NH_3$
(B) $NO_2^- > NO_2 > HN_3 > N_2H_4 > NH_3$
(C) $NO_2 > NO_2^- > HN_3 > NH_3 > N_2H_4$
(D) $HN_3 > NO_2^- > NO_2 > N_2H_4 > NH_3$

Q.15 What is the oxidation state of oxygen in peroxides ?
(A) –3   (B) –2
(C) –4   (D) –1

Q.16 The equivalent wt. of a metal is double that of oxygen. How many times is weight of its oxide greater than the wt. of metal ?
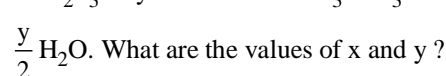(A) 2   (B) 3
(C) 1.5   (D) 0.25

Q.17 The oxidation number of oxygen in Cl_2O and H_2O_2 are respectively
(A) –2 and + 1   (B) + and + 1
(C) –2 and –1   (D) +2 and –1

Q.18 HNO_2 acts as reducing agent in its reaction with
(A) $SnCl_2$ (B) H_2S
(C) Cl_2 (D) SO_2

Q.19 When arsenic sulphide is boiled with NaOH, sodium arsenite and sodium thioarsenite are formed
$x\ As_2S_3 + y\ NaOH \rightarrow x\ Na_3AsO_3 + x\ Na_3AsS_3 +$
$\dfrac{y}{2} H_2O$. What are the values of x and y ?
(A) 1, 6   (B) 2, 8
(C) 2, 6   (D) 1, 4

Q.20 The moles of MnO_4^- that will be needed to react with 1 mol of ferrous oxalate in acidic medium is-
(A) 0.1   (B) 0.6
(C) 0.3   (D) 0.45

For Q.21-Q.25 :
The answer to each question is a NUMERICAL VALUE.

Q.21 The moles of ammonium sulphate needed to react with one mole of MnO_2 in acidic medium in a reaction giving $MnSO_4$ and $(NH_4)_2S_2O_8$ is

Q.22 The oxidation number of phosphorus in $MgNH_4PO_4$ is-

Q.23 The sum of the oxidation numbers of all the carbons in C_6H_5CHO is $(-X)$. Find the value of X.

Q.24 The NH_3 evolved from 1.40 gm sample of protein was absorbed in 45.0 ml of 0.4 (N) HNO_3. The excess acid required 20 ml of 0.1 (N) NaOH. The % N in the sample is-

Q.25 6.90 gm of a metal carbonate were dissolved in 60 ml of 2(N) HCl. The excess acid was neutralized by 20 ml of 1(N) NaOH. What is the equivalent wt. of metal ?