Redox Reaction Dexter Tutorials Sheet

LEVEL-1

1. Oxidation state of nitrogen is incorrectly given for :

	Compound	**Oxidation state**
(a)	$[Co(NH_3)_5Cl]Cl_2$	– 3
(b)	NH_2OH	– 1
(c)	$(N_2H_5)_2SO_4$	+ 2
(d)	Mg_3N_2	– 3

2. $xClO_4^- + yMnO_2 + zOH^- \longrightarrow xClO^- + yMnO_4^{2-} + \frac{z}{2}H_2O.$

In this balanced equation *x*, y, z are

(a) 2,3,6 (b) 1,3,4 (c) 1,3,6 (d) 2,6,6

3. 1 mol of ferric oxalate is oxidized by *x* mol of MnO_4^- and also 1 mol of ferrous oxalate is oxidised by y mol of MnO_4^- in acidic medium. The ratio $\frac{x}{y}$ is

(a) 2 : 1 (b) 1 : 2 (c) 3 : 1 (d) 1 : 3

4. Number of moles of $KMnO_4$ that is needed to react with one mole of FeC_2O_4 in acidic medium is

(a) 2/5 (b) 3/5 (c) 4/5 (d) 1

5. The oxidation state of Cr in CrO_5 is

(a) +10 (b) +6 (c) +3 (d) +3 – 5

6. One mole of N_2H_4 loses 10 mole of electrons to form a new compound Y. Assuming that all nitrogen appears in the new compound, what is the oxidation state of N in Y (there is no change in the oxidation state of hydrogen).

(a) –3 (b) +3 (c) +5 (d) +1

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7. Number of moles of electrons change per mole of $Pb(N_3)_2$ in

$Pb(N_3)_2 + Co(MnO_4)_3 \longrightarrow CoO + MnO_2 + Pb_3O_4 + NO$ is

(a) $\frac{42}{3}$ (b) $\frac{44}{3}$ (c) 10 (d) 44

8. $Zn + OH^- \longrightarrow Zn O_2^{-2} + H_2$

In the balanced equation, what should be the coefficient of OH^-?

(a) 3 (b) 4 (c) 2 (d) 1

9. In the reaction,

$$Zn + NaNO_3 + NaOH \longrightarrow Na_2ZnO_2 + NH_3 + H_2O$$

The molar coefficients of Zn and $NaNO_3$ are

(a) 1 and 4 respectively (b) 4 and 1 respectively

(c) 1 and 8 respectively (d) 8 and 1 respectively

10. Carbon is in highest oxidation state in

(a) CH_3Cl (b) CCl_4 (c) $CHCl_3$ (d) CH_2Cl_2

11. In the reaction,

$$N_2O_5 + H_2O \longrightarrow 2HNO_3$$

the oxidation state of nitrogen

(a) changes from +5 to +2. (b) changes from +2 to +5.

(c) changes from +10 to +5. (d) do not change.

12. The oxidation state of 'S' in Marshall's acid ($H_2S_2O_8$) is

(a) +5 (b) +3 (c) +6 (d) +7

13. Amongst the following, identify the species with an atom in +6 oxidation state.

(a) MnO_4^- (b) $Cr(CN)_6^{3-}$ (c) NiF_6^{2-} (d) CrO_2Cl_2

14. In the following reaction,

$$2Na_2S_2O_3 + I_2 \longrightarrow 2NaI + Na_2S_4O_6$$ $Na_2S_2O_3$ is acting as

(a) an oxidising agent (b) a reducing agent

(c) both (d) none

15. Which of the following statements is incorrect?

(a) Oxidation state of oxygen is + 1 in peroxides.

(b) Oxidation state of oxygen is + 2 in OF_2.

(c) Oxidation state of oxygen is – 0.5 in superoxides.

(d) Oxidation state of oxygen is – 2 in most of its compounds.

16. Which pair of the following compounds has elements in their highest oxidation state?

(a) $[Fe(CN)_6]^{3-}$ and $[Co(CN)_6[^{3-}$ (b) $[MnO_4]^-$ and CrO_2Cl_2

(c) $[MnO_4]^-$ and $[NiF_4]^{2-}$ (d) MnO_2 and TiO_2

17. 0.1g of a metal gave on reaction with dil acid at S.T.P. 34.2ml hydrogen gas. The equivalent weight of the metal is :

(A) 32.7 (B) 48.6 (C) 64.2 (D) 16.3

18. 0.5g of metal on oxidation gave 0.79g of its oxide. The equivalent weight of the metal is

(A) 10 (B) 14 (C) 20 (D) 40

19. 74.5g of the metallic chloride contains 35.5g of chlorine. The equivalent weight of the metal is

(A) 19.5 (B) 35.5 (C) 39.0 (D) 78.0

20. The chloride of a metal (M) contains 65.5% of chlorine. 100ml. of the vapour of the chloride of the metal at S.T.P. weigh 0.72g. The molecular formula of the metal chloride is

(A) MCl (B) MCl_2 (C) MCl_3 (D) MCl_4

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21. The equivalent weight of a metal is 4.5 and the molecular weight of its chloride is 80. The atomic weight of the metal is

(A) 18 (B) 9 (C) 4.5 (D) 36

22. The sulphate of an element contains 42.2% element. The equivalent weight of the metal would be:

(A) 17.0 (B) 35.0 (C) 51.0 (D) 68.0

23. The equivalent weight of an elements is 4. Its chloride has a vapour density 59.25. Then the valency of the elements is

(A) 4 (B) 3 (C) 2 (D) 1

24. The oxide of an element possesses the formula M_2O_3. If the equivalent weight of the metal is 9, then the atomic weight of the metal will be

(A) 9 (B) 18 (C) 27 (D) none of these.

25. Approximate atomic weight of an element is 29.89. If its eq. wt. is 8.9, the exact atomic wt. is:

(A) 26.89 (B) 8.9 (C) 17.8 (D) 26.7

26. 0.534g Mg displaces 1.415g Cu from the salt solution of Cu. Equivalent weight of Mg is 12. The equivalent weight of Cu would be:

(A) 15.9 (B) 47.7 (C) 31.8 (D) 8.0

27. In m_1 gram of a metal A displaces m_2 gram of another metal B from its salt solutions and if the equivalent weights are E_1 and E_2 respectively then the equivalent weight of A can be expressed by

(A) $E_1 = \frac{m_1}{m_2} x E_2$ (B) $E_1 = \frac{m_2 x E_2}{m_1}$

(C) $E_1 = \frac{m_1 x m_2}{E_2}$ (D) $E_1 = \sqrt{\frac{m_1}{m_2} x E_2}$

28. The weight of a metal of equivalent weight 12, which will give 0.475 g of its chloride, is

(A) 0.12 g (B) 0.16 g (C) 0.18 g (D) 0.24 g

29. The equivalent weight of iron in Fe_2O_3 would be

(A) 18.6 (B) 28 (C) 56 (D) 112.0

30. 1.5g of a divalent metal displaced 4g of copper (at.wt. = 64) from a solution of copper sulphate. The atomic weight of the metal is

(A) 12 (B) 24 (C) 48 (D) 6

31. Equivalent weight of $KMnO_4$when it is converted into $MnSO_4$ is

(A) M/5 (B) M/6 (C) M/3 (D) M/2

32. The weight of two elements which combine with one another are in the ratio of their

(A) atomic weight (B) molecular weight

(C) gram mole (D) equivalent weight

33. 0.84g of a metal hydride contains 0.042g of hydrogen. Its equivalent weight is:

(A) 80 (B) 40 (C) 60 (D) 20

34. A metallic oxide contains 60% of the metal. The equivalent weight of the metal is

(A) 12 (B) 24 (C) 40 (D) 48

35. When a metal is burnt, its weight is increased by 24 percent. The equivalent weight of the metal will be

(A) 2 (B) 24 (C) 33.3 (D) 76.

36. 3g of an oxide of a metal is converted to chloride completely and it yield 5g of chloride. The equivalent weight of the metal is

(A) 33.25 (B) 3.325 (C) 12 (D) 20.

37. A bivalent metal has the equivalent weight of 12. The molecular weight of its oxide will be

(A) 24 (B) 34 (C) 36 (D) 40

38. $2\,H_3PO_4 + 3Ca(OH)_2 \rightarrow Ca_3(PO_4)_2 + 6H_2O$.

Equivalent weight of H_3PO_4 in this reaction is

(A) 98 (B) 49 (C) 32.66 (D) 24.5

39. What is the equivalent mass of HCl in the given reaction:

$$2KMnO_4 + 16\,HCl \longrightarrow 2KCl + 2MnCl_2 + 5Cl_2 + 8H_2O$$

(a) $\frac{M}{1}$ (b) $\frac{M}{10}$ (c) $\frac{8M}{5}$ (d) none

40. In an experiment 50 ml of 0.1 M solution of a salt reacted with 25 ml of 0.1 M solution of sodium sulphite. The half equation for the oxidation of sulphite ion is

$$SO_{3\,(aq)}^{2-} + H_2O_{(l)} \rightarrow SO_{4\,(aq)}^{2-} + 2H^+ + 2e^-$$

If the oxidation number of metal in the salt was 3, what would be the new oxidation number of metal?

(a) zero (b) 1 (c) 2 (d) 4

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41. In the titration of $K_2Cr_2O_7$ and ferrous sulphate, following data is obtained : V_1ml of M_1 $K_2Cr_2O_7$ requires V_2 ml M_2 $FeSO_4$ which of the following relations are true :

(a) $6M_1V_1 = M_2V_2$ (b) $M_1V_1 = 6 M_2V_2$

(c) $N_1V_1 = 2N_2V_2$ (d) $M_1V_1 = M_2V_2$

42. An element A in a compound ABD has oxidation number A^{n-}. It is oxidised by $Cr_2O_7^{2-}$ in acidic medium. In the experiment 1.68×10^{-3} mole of $K_2Cr_2O_7$ were used for 3.26×10^{-3} mole of ABD. The new oxidation number of A after oxidation is

(a) 3 (b) 3 – n (c) n – 3 (d) + n

43. The number of moles of As_2S_3 oxidised to H_3AsO_4 and H_2SO_4 by 1 mole of HNO_3 (reduced to NO) is

(a) $\frac{3}{2}$ (b) $\frac{5}{2}$ (c) $\frac{2}{3}$ (d) $\frac{3}{28}$

44. A solution is containing 2.52 g $litre^{-1}$ of a reductant. 25 mL of this solution required 20 mL of 0.01M $KMnO_4$ in acid medium for oxidation. Given that each of the two atoms which undergo oxidation per molecule of reductant, suffer an increase in oxidation state by one unit. The mol. wt. of reductant is-

(a) M = 126 (b) M = 130 (c) M = 128 (d) M = 127

45. H_2O_2 is reduced rapidly by Sn^{2+} to form Sn^{4+} and H_2O. 100 ml of H_2O_2 solution is reduced completely by 50 ml of 0.2M $SnCl_2$ solution. Calculate the volume strength of H_2O_2.

(a) 11.2 (b) 1.12 (c) 0.112 (d) none

46. In 10 ml of H_2O_2 solution, excess of acidified solution of KI is added. The iodine liberated needs 20 ml of 0.1M $Na_2S_2O_3$ solution. The volume strength of H_2O_2 is

(a) 1.12 (b) 2.24 (c) 3.24 (d) 4.44

47. In the reaction, $P + Cr_2O_7^{2-} + H^+ \longrightarrow PO_4^{3-} + Cr^{+3} + H_2O$ if 0.2 moles of $Cr_2O_7^{2-}$ are taken then moles of 'P' reacted is

(a) 0.34 (b) 0.14 (c) 0.24 (d) 0.04

48. In the following reaction,

$$MnO_2 + 4HCl \longrightarrow MnCl_2 + Cl_2 + 2H_2O$$

n–factor of HCl is

(a) ½ (b) 1 (c) 2 (d) 4

49. The equivalent weight of Fe_3O_4 in the reaction,

$Fe_3O_4 + KMnO_4 \longrightarrow Fe_2O_3 + MnO_2$ would be

(a) M/6 (b) M (c) 2M (d) M/3

50. In the following reaction,

$$NO_3^- + As_2S_3 + 4H_2O \longrightarrow AsO_4^{3-} + NO + SO_4^{2-} + H^+$$

equivalent weight of As_2S_3 (molecular weight M) is

(a) M/2 (b) M/4 (c) M/24 (d) M/28

51. In a reaction, 4 mole of electrons are transferred to one mole of HNO_3 when it acts as an oxidant. The possible reduction product is

(a) (1/2) mole N_2 (b) (1/2) mole N_2O

(c) 1 mole of NO_2 (d) 1 mole NH_3

52. 0.5 g of impure ammonium chloride when heated with excess of NaOH gives ammonia gas which is absorbed in 150 ml of N/5 H_2SO_4 solution. Excess of acid is completely neutralised by 20 ml of 1N NaOH solution. The percentage of ammonia in ammonium chloride is

(a) 68% (b) 34% (c) 48% (d) 17%

53. 2.25 gm mixture of Na_2CO_3 and Na_2SO_4 are dissolved in 250 ml of solution. 25 ml of above solution required 20 ml of 0.1N H_2SO_4 by using phenolphthalein indicator. The mass of Na_2CO_3 in the mixture is

(a) 1.5 gm (b) 2.12 gm (c) 2.05 gm (d) 1.6 gm

54. 25 mL of a solution of Na_2CO_3 having a specific gravity of 1.25 g mL^{-1} required 32.9 mL of a solution of HCl containing 109.5 g of the acid per litre for complete neutralization. Find the volume of 0.84 N H_2SO_4 that will be completely neutralized by 125 g of Na_2CO_3 solution.

(a) 470 mL (b) 370 mL (c) 530 mL (d) 280 mL

55. A solution containing 4.2 g of KOH and $Ca(OH)_2$ is neutralized by an acid. If it consumes 0.1 equivalent of acid, composition of sample in solution is which of the following?

(a) 45%, 55% (b) 35%, 65% (c) 25%, 75% (d) 15%, 85%

56. 100 ml of 10V H_2O_2 solution is heated. The evolved gas is completely reacted with Ca to form CaO. The aqueous solution of CaO is neutralised by 50 ml of H_2SO_4 solution. The molarity of H_2SO_4 is

(a) 2.43 M (b) 1.78 M (c) 1.55 M (d) 2.78 M

57. A mixture of $NaHCO_3$ and Na_2CO_3 is neutralised by xml of 1M HCl by using phenolphthalein indicator. The above mixture is neutralised by yml of 1M HCl by using methyl orange indicator. The mole of CO_2 evolved on heating the above mixture at lower temperature is

(a) $\frac{y-2x}{1000}$ (b) $\frac{y-2x}{2000}$ (c) $\frac{2x-y}{1000}$ (d) $\frac{2x-y}{2000}$

58. The normality of 0.1 M H_3PO_3 when it undergoes following reaction,

$$H_3PO_3 + 2OH^- \longrightarrow HPO_3^{2-} + 2H_2O$$ would be

(a) 0.1 (b) 0.2 (c) 0.3 (d) 0.05

59. The equivalent weight of the compound $KHC_2O_4.H_2C_2O_4.4H_2O$ used in neutralisation is

(a) $\frac{\text{molecular weight}}{1}$ (b) $\frac{\text{molecular weight}}{2}$

(c) $\frac{\text{molecular weight}}{3}$ (d) $\frac{\text{molecular weight}}{4}$

60. The normality of 0.3 M phosphorous acid (H_3PO_3) is

(a) 0.1 (b) 0.9 (c) 0.3 (d) 0.6

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61. 0.52 g of a dibasic acid required 100 ml of 0.1 N NaOH of complete neutralisation. The equivalent weight of acid is

(a) 26 (b) 52 (c) 104 (d) 156

62. What would be the normality of a 0.1 M $K_2Cr_2O_7$ solution used as a precipitating agent for Pb^{2+}?

(a) 0.1 N (b) 0.6 N (c) 0.4 N (d) 0.2 N

63. 3g of an oxide of a metal is converted to chloride completely and it yielded 5 g chloride. The equivalent weight of metal is

(a) 33 (b) 42 (c) 12 (d) 40

64. An aqueous solution of 6.3 g oxalic acid dihydrate is made up to 250 ml. The volume of 0.1 N NaOH required to completely neutralize 10 ml of this solution is

(a) 40 ml (b) 20 ml (c) 1 ml (d) 4 ml

65. In the reaction, $H_3PO_4 + Ca(OH)_2 \longrightarrow CaHPO_4 + 2H_2O$, the equivalent weight of H_3PO_4 is

(a) 32.7 (b) 49.0 (c) 98.0 (d) 196.0

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DexterChem

LEVEL-3

1. Mass of KHC_2O_4 (potassium acid oxalate) required to reduce 100 ml of 0.02 M $KMnO_4$ in acidic medium (to Mn^{2+}) is x g, and to neutralize 100 ml of 0.05 M $Ca(OH)_2$ is y g then

(A) $x = y$ (B) $2x = y$ (C) $x = 2y$ (D) none

2. If equal volumes of 1 M $KMnO_4$ and 1 M $K_2Cr_2O_7$ solution are allowed to oxidize Fe (II) to Fe (III), then Fe (II) oxidized will be

(A) More by $KMnO_4$ (B) More by $K_2Cr_2O_7$

(C) Equal in both cases (D) Data is incomplete

3. 100 ml of 1 M $KMnO_4$ oxidized 100 ml of H_2O_2 in acidic medium (when MnO_4^- is reduced to Mn^{2+}); volume of same $KMnO_4$ required to oxidize 100 ml of H_2O_2 in neutral medium (when MnO_4^- is reduced to MnO_2) will be

(A) $100/3$ ml (B) $500/3$ ml (C) $300/5$ ml (D) 100 ml

4. 10 ml of H_2O_2 solution (volume strength = x) required 10 ml of 0.1N MnO_4^- solution in acidic medium. Hence, x is:

(A) 0.56 (B) 5.6 (C) 0.1 (D) 10.0

5. 20 ml of x M HCl neutralizes completely 10 ml of 0.1 M $NaHCO_3$ and a further 5 ml of 0.2M Na_2CO_3 solution to methyl orange end-point. The value of x is

(A) 0.167 M (B) 0.133 M (C) 0.150 M (D) 0.200 M

6. 10 ml of $NaHC_2O_4$ solution is neutralized by 10 ml of 0.1M NaOH solution. 10 ml of same $NaHC_2O_4$ solution is oxidized by 10 ml of $KMnO_4$ solution in acidic medium. Hence, molarity of $KMnO_4$ is

(A) 0.1 M (B) 0.2 M (C) 0.04 M (D) 0.02 M

7. 1 mol of ferric oxalate is oxidized by x mole of MnO_4^- and also 1 mol of ferrous oxalate is oxidized by y mol of MnO_4^- in acidic medium. The ratio x/y is

(A) 2 : 1 (B) 1 : 2 (C) 3 : 1 (D) 1 : 3

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8. 40 ml of 0.05 M solution of sesquicarbonate ($Na_2CO_3.NaHCO_3.2H_2O$) is titrated against 0.05 M HCl. *x* ml of HCl is used when phenolphthalein is the indicator and *y* ml of HCl is used when methyl orange is the indicator in two separation titration, hence ($y - x$) is

(A) 80 ml (B) 30 ml (C) 120 ml (D) none

9. 3 mol of a mixture of $FeSO_4$ and $Fe_2(SO_4)_3$ required 100 ml of 2 M $KMnO_4$ solution in acidic medium. Hence, mol fraction of $FeSO_4$ in the mixture is

(A) 1/3 (B) 2/3 (C) 2/5 (D) 3/5

10. 5.3 g of M_2CO_3 is dissolved in 150 ml of 1 M HCl. Unused acid required 100 ml of 0.5 M NaOH. Hence, equivalent weight of M is

(A) 53 (B) 12 (C) 24 (D) 13

11. Equivalent weight of H_3PO_2 when it disproportionates into PH_3 and H_3PO_3 is

(mol. wt.of H_3PO_2 = M)

(A) M (B) M/2 (C) M/4 (D) 3M/4

12. I_2 obtained from 0.1 mol of $CuSO_4$ required 100 ml of 1 M hypo solution, hence, mol percentage of pure $CuSO_4$ is:

(A) 100 (B) 50 (C) 25 (D) 40

13. 1.2 g of Mg is treated with 100 ml of 1 M H_2SO_4. Molar concentration of the H_2SO_4 solution after complete reaction is:

(A) 0.05 M (B) 0.005 M (C) 0.50 M (D) 0.0005 M

14. Volume of 18.0 M H_2SO_4 required to prepare 1.0 litre of a 0.9 M solution of H_2SO_4 is:

(A) 50.0 ml (B) 10.0 ml (C) 500.0 ml (D) 5.0 ml

15. Volume of 0.50 M NaOH solution required to react with 40.0 ml of 0.05 M H_2SO_4 solution is:

(A) 40.0 ml (B) 80.0 ml (C) 20.0 ml (D) 8.0 ml

16. 150 ml of 6.00 M H_2SO_4 solution is mixed with 250 ml of 3.00 M H_2SO_4. Resulting molarity is:

(A) 4.125 M (B) 8.250 M (C) 4.500 M (D) 1.650 M

17. Oxalic acid ($H_2C_2O_4$) forms two series of salt $HC_2O_4^-$ and $C_2O_4^{2-}$. If 0.9 g of oxalic acid is in 100 ml solution, $HC_2O_4^-$ and $C_2O_4^{2-}$ have normality respectively:

(A) 0.1 N, 0.1 N (B) 0.1 N, 0.2 N (C) 0.2 N, 0.2 N (D) 0.2 N, 0.1 N

18. 10 g of MnO_2 on reaction with conc. HCl liberated 0.1 equivalent of Cl_2 (Mn = 55). Hence, percent purity of MnO_2 is:

(A) 87.0 (B) 21.75 (C) 50.0 (D) 43.5

19. 0.106 g of Na_2CO_3 completely neutralizes 40.0 ml of H_2SO_4. Hence, normality of H_2SO_4 solution is:

(A) 0.05 N (B) 0.025 N (C) 0.10 N (D) 0.20 N

20. Volume of 0.02 M MnO_4^- solution required to oxidize 40.0 ml of 0.1 M Fe^{2+} solution is:

(A) 200 ml (B) 100 ml (C) 40 ml (D) 20 ml

21. A 20.0 ml solution of Na_2SO_3 required 30 ml of 0.01 M $K_2Cr_2O_7$ solution for the oxidation to Na_2SO_3. Hence, molarity of Na_2SO_3 solution is:

(A) 0.015 M (B) 0.045 M (C) 0.030 M (D) 0.0225 M

22. 1.00 L of 0.15M NaOH absorbed 11.2 mmol of CO_2 from air. Hence, new molarity of NaOH is:

(A) 0.1276 M (B) 0.1500 M (C) 0.0224 M (D) 0.0112 M

23. If **a** gm is the mass of $NaHC_2O_4$ required to neutralize 100 mL of 0.2 M NaOH and **b** gm tha required to reduce 100 mL of 0.2 M $KMnO_4$ in acidic medium, then

(A)a = b (B) 2a = b (C) a = 2b (D) None

24. A mixture of $Na_2C_2O_4$ (A) and $KHC_2O_4.H_2C_2O_4$ (B) required equal volume of 0.1 M $KMnO_4$ and 0.1 M NaOH separately. Molar ratio of A and B in the mixture is

(A) 1 : 1 (B) 1 : 5.5 (C) 5.5 : 1 (D) 3.1 : 1

25. An excess of NaOH was added to 100 mL of a ferric chloride solution. This caused the precipitation of 1.425 g of $Fe(OH)_3$. Calculate the normality of the ferric chloride solution

(A) 0.20 N (B) 0.50N (C) 0.25 N (D) 0.40 N

26. 0.4g of a polybasic acid H_nA (all the hydrogens are acidic) requires 0.5g of NaOH for complete neutralization. The number of replaceable hydrogen atoms in the acid and the molecular weight of 'A' would be : (Molecular weight of the acid is 96 gms.)

(A) 1,95 (B) 2,94 (C) 3,93 (D) 4,92

27. A solution of $Na_2S_2O_3$ is standardized iodimetrically against 0.1262 g of $KBrO_3$. This process requires 45.mL of the $Na_2S_2O_3$ solution. What is the strength of the $Na_2S_2O_3$?

(A) 0.2M (B) 0.1M (C) 0.05 M (D) 0.1N

28. 25.0 g of $FeSO_4.7H_2O$ was dissolved in water containing dilute H_2SO_4, and the volume was made up to 1.0 L. 25.0 mL of this solution required 20 mL of an N/10 $KMnO_4$ solution for complete oxidation. The percentage of $FeSO_4.7H_2O$ in the acid solution is

(A) 78% (B) 98% (C) 89% (D) 79%

29. 1.0 mol of Fe reacts completely with 0.65 mol of O_2 to give a mixture of only FeO and Fe_2O_3. The mole ratio of ferrous oxide to ferric oxide is

(A) 2: 3 (B) 4:3 (C) 1 : 2 (D) 2 : 7

30. 25 mL of a solution containing HCl and H_2SO_4 required 10 mLbf a 1 N NaOH solution for neutralization. 20 mL of the same acid mixture on being treated with an excess of $AgNO_3$ gives 0.1435 g of AgCl. The normality of the HCl and the normality of the H_2SO_4 are respectively

(A) 0.40 N and 0.05 N (B) 0.05 N and 0.35 N

(C) 0.50 N and 0.25 N (D) 0.40 N and 0.5 N

31. 0.70 g of mixture $(NH_4)_2SO_4$ was boiled with 100 mL of 0.2 N NaOH solution till all the $NH_3(g)$ evolved and get dissolved in solution itself. The remaining solution was diluted to 250 mL. 25 mL of this solution was neutralized using 10 mL of a 0.1 N H_2SO_4 solution. The percentage purity of the $(NH_4)_2SO_4$ sample is

(A) 94.3 (B) 50.8 (C) 47.4 (D) 79.8

32. A mixed solution of potassium hydroxide and sodium carbonate required 15 mL of an N/20 HCl solution when titrated with phenoiphthalein as an indicator. But the same amount of the solution when titrated with methyl orange as an indicator required 25 mL of the same acid. The amount of KOH present in the solution is

(A) 0.014 g (B) 0.14g (C) 0.028 g (D) 1.4g