doubtnut
India's Number 1 Education App

CHEMISTRY

BOOKS - BRILLIANT PUBLICATION

REDOX REACTIONS

Questions

1. Find out the oxidation number of (i) C in CO_2 (ii) Cr in $Cr_2O_7^{2-}$ (iii) Pb in Pb_3O_4.

Watch Video Solution

2. What is the oxidation number of iodine in the following compounds: (a) KI, (b) I_2 (c) ICl_3, (d) IF_5 (e) HIO_4.

Watch Video Solution

3. Find the oxidation number of Mn, Cr and Cl in $KMnO_4$, $K_2Cr_2O_7$ and $KClO_4$ respectively.

Watch Video Solution

4. The outermost subshell electronic configuration of an element is $3s^2 3p^4$. Answer the following questions.

a) Write the complete subshell electronic configuration.

b) Find the valency of this element?

c) Is it metal or non-metal? Give reason.

Watch Video Solution

5. Write the net ionic equation for the reaction of potassium dichromate (VI), $K_2Cr_2O_7$ with ferrous sulphate $(FeSO_4)$ in sulphuric acid to ferric $\left(Fe^{3+}\right)$ ion and chromium(III) ion.

Watch Video Solution

6. Permanganate ion reacts with bromide ion in basic medium to give manganese dioxide and bromate ion. Write the balanced equation for the reaction using oxidation number method.

Skeletal equation is

$MnO_4^- + Br^- \rightarrow MnO_2 + BrO_3^-$

Watch Video Solution

7. Write the balanced ionic equation for the reaction of zinc with conc. nitric acid to produce zinc nitrate, nitrogen dioxide and water:

Watch Video Solution

8. Write ionic equation for the reaction between $Cr_2O_7^{2-}$ ions and Fe^{2+} ions in acidic medium?

Watch Video Solution

9. Give the balanced ionic equation for the oxidation of I^- by MnO_4^- ions in basic medium to produce molecular iodine (I_2) and manganese (IV) oxide (MnO_2).

Watch Video Solution

Level I

1. In which SO_2 acts as oxidant, while reacting with:

A. acidified $KMnO_4$

B. acidified $K_2Cr_2O_7$

C. H_2S

D. acidified C_2H_5OH

Answer: C

Watch Video Solution

2. Oxidation number of carbon in C_3O_2, Mg_2C_3 are respectively:

A. $-4/3,\ +4/3$

B. $+4/3,\ -4/3$

C. $-2/3,\ +2/3$

D. $-2/3,\ +4/3$

Answer: B

Watch Video Solution

3. A sulphur containing species that cannot be a reducing agent is:

A. H_2SO_4

B. H_2S

C. SO_2

D. H_2SO_3

Answer: B

Watch Video Solution

4. The oxidation number of Cr in $\left[Cr(NH_3)_4Cl_2\right]^+$ is:

A. $+3$

B. $+2$

C. $+1$

D. Zero

Answer: A

Watch Video Solution

5. The oxidation state of most electronegative element in the products of the reaction, 'BaO_2' with dil. 'H_2 SO_4' are

A. 0 and -1

B. -1 and -2

C. -2 and 0

D. -2 and $+1$

Answer: B

Watch Video Solution

6. In which of the following compounds, the oxidation number of iodine is fractional?

A. IF_7

B. I_3^-

C. IF_5

D. IF_3

Answer: B

Watch Video Solution

7. Which of the following processes does not involve oxidation of iron?

A. Decolourization of blue $CuSO_4$ solution by iron

B. Formation of $Fe(CO)_5$ from Fe

C. Liberation of H_2 from steam by iron at high temperature

D. Rusting of iron sheets

Answer: B

Watch Video Solution

8. MnO_4^{2-} undergoes disproportionation reaction in acidic medium but MnO_4^- does not because

A. In MnO_4^{2-} Mn is in intermediate oxidation state

B. In MnO_4^- Mn is in lowest oxidation state

C. In MnO_4^- Mn is in intermediate oxidation state

D. None of the above

Answer: A

Watch Video Solution

9. In half reaction: $S_2O_3^{2-} \rightarrow S_4O_6^{2-}$ .The number of electrons that must be added:

A. 2, on right side

B. 2, on left side

C. 3, on right side

D. 4, on left side

Answer: A

Watch Video Solution

10. Which of the following chemical reactions depicts the oxidizing behaviour of H_2SO_4 ?

A. $2HI + H_2SO_4 \rightarrow I_2 + SO_2 + 2H_2O$

B. $Ca(OH)_2 + H_2SO_4 \rightarrow CaSO_4 + 2H_2O$

C. $NaCl + H_2SO_4 \rightarrow NaHSO_4 + HCl$

D. $2PCl_5 + H_2SO_4 \rightarrow 2POCl_3 + 2HCl + SO_2Cl_2$

Answer: A

Watch Video Solution

11. In which of the following changes, there is transfer of five electrons?

A. $MnO_4^- \rightarrow Mn^{2+}$

B. $CrO_4^{2-} \rightarrow Cr^{3+}$

C. $MnO_4^{2-} \rightarrow MnO_2$

D. $Cr_2O_7^{2-} \rightarrow 2Cr^{3+}$

Answer: A

Watch Video Solution

12. The following reaction describes the production of metallic iron: $2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$ How many electrons are lost by each carbon atom in this reaction?

A. 1

B. 2

C. 3

D. 4

Answer: D

Watch Video Solution

13. The correct order of compounds in the decreasing order based on the oxidation state of oxygen in them is

A. $OF_2 > HOF > KO_2 > Sr(IO_3)_2$

B. $OF_2 > KO_2 > HOF > Sr(IO_3)_2$

C. $HOF > KO_2 > Sr(IO_3)_2 > OF_2$

D. $KO_2 > OF_2 > HOF > Sr(IO_3)_2$

Answer: A

Watch Video Solution

14. Which products are expected from the disproportionation of hypochlorous acid

A. $HClO_3$ and Cl_2O

B. $HClO_2$ and $HClO_4$

C. HCl and Cl_2O

D. HCl and $HClO_3$

Answer: D

Watch Video Solution

15. The equivalent mass of oxidising agent in the following reaction is,

$SO_2 + 2H_2S \rightarrow 3S + 2H_2O$

A. 32

B. 64

C. 16

D. 8

Answer: C

Watch Video Solution

16. Complete the balancing of the following half reaction, taking place in basic media, $Br^-(aq) \rightarrow BrO_3^-(aq)$How many electrons are needed to balance it?

A. 2 electrons, left side

B. 2 electrons, righ side

C. 4 electrons, right side

D. 6 electrons, right side

Answer: D

Watch Video Solution

17. Consider the metals: Mn, Mg, Zn, Ag, Cu. Based on their reactivity order, pick the correct statement

A. All five metals produce hydrogen gas on reacting with acids

B. Ag will substitute Cu from its aqueous solution

C. Mn will substitute Zn from its aqueous solution

D. Cu will substitute Mg from its aqueous solution

Answer: C

Watch Video Solution

18. SO_2 under atmospheric condition changes to SO_x^{2-} .If oxidation number of S is +6, what is the value of x in SO_x^{2-} ?

A. 1

B. 2

C. 3

D. 4

Answer: D

Watch Video Solution

19. Equivalent weight of H_3PO_2 (molecular weight=M) when it disproportionates into PH_3 and H_3PO_3 is

A. M

B. $M/2$

C. $M/4$

D. $3M/4$

Answer: D

Watch Video Solution

20. In the reaction,

$$C_4H_{10(l)} + Cr_2O_{7(aq)}^{2-} + H_{(aq)}^{+} \rightarrow H_6C_4O_{4(s)} + Cr_{(aq)}^{3+} + H_2O_{(l)}$$

the change in the oxidation number of the chromium atom is

A. a decrease by six units

B. a decrease by three units

C. an increase by three units

D. an increase by five units

Answer: B

Watch Video Solution

21. Number of moles of $K_2Cr_2O_7$, reduced by one mole of Sn^{2+} ions is:

A. $1/3$

B. $1/6$

C. $2/3$

D. 1

Answer: A

Watch Video Solution

22. In the alkaline medium, the colour of potassium dichromate solution changes from orange to yellow due to the formation of potassium chromate. What is the change in oxidation state of chromium?

A. 1

B. 2

C. 3

D. 0

Answer: D

Watch Video Solution

23. A compound contains atoms of three elements A, B, and C. If the oxidation number of A is +2, B is +5 and that of C is–2, the possible formula of the compound is

A. $A_3(BC_4)_2$

B. $A_3(B_4C)_2$

C. ABC_2

D. $A_3(BC_3)_2$

Answer: A

Watch Video Solution

24. H_2O_2 acts as a reducing agent in

A. $FeCl_2 + HCl + H_2O_2 \rightarrow FeCl_3 + H_2O$

B. $Cl_2 + H_2O_2 \rightarrow 2HCl + O_2$

C. $2HI + H_2O_2 \rightarrow I_2 + H_2O$

D. $H_2SO_3 + H_2O_2 \rightarrow H_2SO_4 + H_2O$

Answer: B

Watch Video Solution

25. Oxidation number of S in H_2SO_5 is

A. $+8$

B. $+6$

C. $+4$

D. $+2$

Answer: B

Watch Video Solution

26. Which one is not correct about the change given below?

$K_4\left[Fe(CN)_6\right] \xrightarrow{\text{oxi}} Fe^{3+} + CO_2 + NO_3^-$

A. Fe is oxidised Fe^{2+} to Fe^{3+}

B. Carbon is oxidised from C^{2+} to C^{4+}

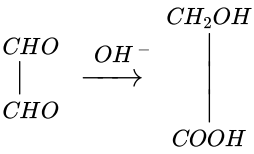
C. N is oxidised from N^{3-} to N^{5+}

D. Carbon is not oxidised

Answer: D

Watch Video Solution

27. Which of the following isintermolecular redox reaction?

A. 

B. $2C_6H_6CHO \xrightarrow{Al(OC_2H_5)_3} C_6H_5COOH + C_6H_5CH_2OH$

C. $4CrO_5 + 6H_2SO_4 \rightarrow 2Cr_2(SO_4)_3 + 6H_2O + 7O_2$

D. $As_2S_3 + HNO_3 \rightarrow H_3AsO_4 + H_2SO_4 + NO$

Answer: D

Watch Video Solution

28. The oxidation number of sulphur in S_8, S_2F_2 and H_2S are:

A. $0, +1$ and -2

B. $+2, +1$ and -2

C. $0, +1$ and $+2$

D. $-2, +1$ and -2

Answer: A

Watch Video Solution

29. In a reaction, 4 mole of electrons are transferred to 1 mole of HNO3, the possible productobtained due to reduction is:

A. 0.5 mole of N_2

B. 0.5 mole of N_2O

C. 1 mole of NO_2

D. 1 mole of NH_3

Answer: B

Watch Video Solution

30. The colour of $K_2Cr_2O_7$changes from red-orange to lemon yellow on treatment with aq.KOH because of:

A. Reduction of Cr(VI) to Cr(III)

B. Formation of chromium hydroxide

C. Conversion of dichromate into chromate ion

D. Oxidation of potassium hydroxide to potassium peroxide

Answer: C

Watch Video Solution

31. One mole of hydrazine (N_2H_4) loses 10 moles of electrons in a reaction to form a new compound X. Assuming that all the nitrogen atoms in hydrazine appear in the new compound, what is the oxidation state of nitrogen in X ? (Note There is no change in the oxidation state of hydrogen in the reaction)

A. -1

B. -3

C. $+3$

D. $+5$

Answer: C

Watch Video Solution

32. For the redox reaction,

$$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$$

The correct coefficients of the reactants for the balanced reaction are:

A.	MnO_4^-	$C_2O_4^{2-}$	H^+
	2	5	16
B.	MnO_4^-	$C_2O_4^{2-}$	H^+
	16	5	2
C.	MnO_4^-	$C_2O_4^{2-}$	H^+
	5	16	2
D.	MnO_4^-	$C_2O_4^{2-}$	H^+
	2	16	5

Answer: A

Watch Video Solution

33. The oxidation state of chromium in the final product formed in the reaction between KI and acidified potassium dichromate solution is

A. $+4$

B. $+6$

C. $+2$

D. $+3$

Answer: D

Watch Video Solution

34. 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

Answer: D

Watch Video Solution

35. The reaction of white phosphorous with aqueous NaOH gives phsophine along with another phosphorous containing compound. The reaction type, the oxidation states of phosphorous in phosphine and the other product are respectively:

A. redox reaction, -3 and -5

B. redox reaction , + 3 and + 5

C. disproportionation reaction, -3 and + 1

D. disproportion reaction, -3 and + 3

Answer: C

Watch Video Solution

36. Hydrogen peroxide in its reaction with KIO_4 and NH_2OH respectively, is acting as a:

A. reducing agent , oxidising agent

B. reducing agent, reducing agent

C. oxidising agent, oxidising agent

D. oxidising agent, reducing agent

Answer: A

Watch Video Solution

37. Arrange the following in the increasing order of oxidation state of Mn:

$(i) Mn^{2+}$ $(ii) MnO_2$ $(iii) KMnO_4$ $(iv) K_2MnO_4$

A. $(i) > (ii) > (iii) > (iv)$

B. $(i) < (ii) < (iv) < (iii)$

C. $(ii) < (iii) < (i) < (iv)$

D. $(iii) < (i) < (iv) < (ii)$

Answer: B

Watch Video Solution

38. Which of the following has least oxidation state of Fe?

A. $K_3[Fe(OH)_6]$

B. $K_2[FeO_4]$

C. $FeSO_4.(NH_4)_2SO_{4.6}H_2O$

D. $[Fe(CN)_6]^{3-}$

Answer: C

Watch Video Solution

39. In the reaction, $8Al + 3Fe_3O_4 \rightarrow 4Al_2O_3 + 9Fe$, the number of electrons transferred from reductant to oxidant is:

A. 8

B. 4

C. 16

D. 24

Answer: D

Watch Video Solution

40. In the balanced chemical reaction, $IO_3^- + aI^- + bH^+ \rightarrow cH_2O + dI_2$, a, b, c and d respectively correspond to:

A. 5,6,3,3

B. 5,3,6,3

C. 3,5,3,6

D. 5,6,5,5

Answer: A

Watch Video Solution

41. In alkaline medium ClO_2 oxidises H_2O_2 to O_2 and itself gets reduced to Cl^- . How many moles of H_2O_2 are oxidized by 1 mole of ClO_2 ?

A. 1

B. 1.5

C. 2.5

D. 3.5

Answer: C

Watch Video Solution

42. The oxidation state of iodine in IPO_4 is

A. $+1$

B. $+3$

C. $+5$

D. $+7$

Answer: B

Watch Video Solution

43. In alkaline medium, H_2O_2 reacts with Fe^{3+} and Mn^{2+} separately to give:

A. Fe^{4+} and Mn^{4+}

B. Fe^{2+} and Mn^{4+}

C. Fe^{3+} and Mn^{4+}

D. Fe^{4+} and Mn^{2+}

Answer: C

Watch Video Solution

44. When hydrogen peroxide is added to acidified potassium dichromate, a blue colour is produced due to formation of

A. CrO_3

B. Cr_2O_3

C. CrO_5

D. CrO_4^{2-}

Answer: C

Watch Video Solution

45. Number of moles of MnO_4^- required to oxidise one mole of ferrous oxalate completely in acid medium will be:

A. 7.5 moles

B. 0.2 moles

C. 0.6 moles

D. 0.4 moles

Answer: D

Watch Video Solution

46. Freshly prepared, bright blue coloured solution of sodium in liquid ammonia can be used to reduce the organic functional moieties. In this, the actual reducing species is:

A. $\left[Na(NH_3)_n\right]^+$

B. $\left[H_2(NH_3)_n\right]$

C. $\left[NaNH_2(NH_3)_n\right]$

D. $\left[e(NH_3)_n\right]^-$

Answer: D

Watch Video Solution

47. The oxidation number of nitrogen atoms in NH_4NO_3 are

A. $+3,\ +3$

B. $+3,\ -3$

C. $-3,\ +5$

D. $-5,\ +3$

Answer: C

Watch Video Solution

48. When methane is burnt in oxygen to produce CO_2 and H_2O, the oxidation number of carbon changes by:

A. -8

B. zero

C. $+8$

D. $+4$

Answer: C

Watch Video Solution

49. Which of the following reactions do not involve oxidation reduction?

I) $2Cs + 2H_2O + 2CsOH + H_2$

II) $2CuI_2 \rightarrow 2CuI + I_2$

III) $NH_4Br + KOH \rightarrow KBr + NH_3 + H_2O$

IV) $4KCN + Fe(CN)_2 \rightarrow K_4[Fe(CN)_6]$

A. I, II

B. I, III

C. I, III, IV

D. III, IV

Answer: D

Watch Video Solution

50. In which of the following pairs is there the greatest difference in the oxidation numbers of the underlined elements?

A. $\underline{N}O_2$ and $\underline{N_2}O_4$

B. $\underline{S}O_3^{2-}$ and $\underline{S}O_4^{2-}$

C. $\underline{S}^{2-}$ and $\underline{S_2}O_3^{2-}$

D. $\underline{S}^{2-}$ and $\underline{S}O_4^{2-}$

Answer: D

Watch Video Solution

Level Ii

1. Which of the following is not a disproportionation reaction?

A. $P_4 + \overset{\Theta}{O}H \rightarrow H_2PO_2^{\Theta} + PH_3$

B. $Cl_2 + \overset{\Theta}{O}H \rightarrow Cl^{\Theta} + ClO^{\Theta}$

C. $2H_2O_2 \rightarrow 2H_2O + O_2$

D. $Na_2O_2 + 2H_2O \rightarrow 2NaOH + H_2O_2$

Answer: D

Watch Video Solution

2. When SO_2 is passed through acidified solution of potassium dichromate, then chromium sulphate is formed. The change in oxidation number of chromium is:

A. $+4$ to $+2$

B. $+5$ to $+3$

C. $+6$ to $+3$

D. $+7$ to $+2$

Answer: C

Watch Video Solution

3. Excess of KI reacts with $CuSO_4$ solution and then $Na_2S_2O_3$ solution is added to it. Which of the statement is incorrect in this reaction?

A. Evolved I_2 is reduced

B. CuI_2 is formed

C. $Na_2S_2O_3$ is oxidised.

D. Cu_2I_2 is formed

Answer: B

Watch Video Solution

4. The value of 'n' in, $MnO_4^- + 8H^+ + ne \rightarrow Mn^{2+} + 4H_2O$ is:

A. 5

B. 4

C. 3

D. 2

Answer: A

Watch Video Solution

5. When Sn (IV) chloride is treated with excess HCl, the complex $[SnCl_6]^{2-}$ is formed. The oxidation state of Sn in this complex is:

A. $+6$

B. -2

C. $+4$

D. -5

Answer: C

Watch Video Solution

6. A compound of Xe and F is found to have 53.3% Xe. Oxidation number of Xe in this compound is:

A. -4

B. zero

C. $+4$

D. $+6$

Answer: D

Watch Video Solution

7. When the ion $Cr_2O_7^{2-}$ acts as an oxidant in acidic aqueous solution the ion Cr^{3+} is formed. How many mole of Sn^{2+} would be oxidised to Sn^{4+} by one mole of $Cr_2O_7^{2-}$ ions?

A. $2/3$

B. $3/2$

C. 2

D. 3

Answer: D

Watch Video Solution

8. In a reaction, 4 mole of electrons are transferred to 1 mole of HNO3, the possible productobtained due to reduction is:

A. (1/2)mole N_2

B. (1/2) mole N_2O

C. 1 mole of NO_2

D. 1 mole NH_3

Answer: B

Watch Video Solution

9. $NaIO_3$ reacts with $NaHSO_3$ according to equation: $IO_3^- + 3HSO_3^- \rightarrow I^- + 3H^+ + 3SO_4^{2-}$. The weight of $NaHSO_3$ required to react with 100 mL of solution containing 0.66 g of $NaIO_3$ is

A. 5.2g

B. 4.57g

C. 2.3 g

D. 1.04 g

Answer: D

Watch Video Solution

10. The values of'x' and 'y'in the following redox reaction are: -

$$xCI_2 + 6OH^- \rightarrow ClO_3^- + yCl^- + 3H_2O$$

A. x=2, y=4

B. x=5, y=3

C. x=3, y=5

D. x=4, y=2

Answer: C

Watch Video Solution

11. A mixture of potassium chlorate, oxalic acid and sulphuric acid is heated. During the reaction which element undergoes maximum change in the oxidation number?

A. Cl

B. C

C. K

D. H

Answer: A

Watch Video Solution

12.

$i)H_2O_2 + O_3 \rightarrow H_2O + 2O_2 \quad ii)H_2O_2 + Ag_2O \rightarrow 2Ag + H_2O + O_2$

Role of hydrogen peroxide'in the above reactions is respectively:

A. oxidizing in (i) and reducing in (ii)

B. reducing in (i) and oxidizing in (ii)

C. reducing in (i) and (ii)

D. oxidizing in (i) and (ii)

Answer: C

Watch Video Solution

13. In the unbalanced reaction:

$$Al + KMnO_4 + H_2SO_4 \rightarrow K_2SO_4 + Al_2(SO_4)_3 + MnSO_4 + H_2O$$

If the stoichiometric coefficients of $Al, H_2SO_4 MnSO_4$ and H_2O are w,x,yand z respectively, the numerical value are

A. 2. 6. 7. 8

B. 1.6.7.3

C. 10. 24.6.24

D. 24. 23.5.10

Answer: B

Watch Video Solution

14. The oxidation number of carbon is zero in

$I)HCHO \quad II)CH_2CI_2 \quad III)C_6H_{12}O_6 \quad IV)C_{12}H_{22}O_{11}$

A. I, II only

B. I, II, III only

C. All

D. None

Answer: C

Watch Video Solution

15. For the redox reaction, $Zn + NO_3^- \rightarrow Zn^{2+} + NH_4^+$ in basic medium, the coefficients of Zn, NO_3^- and OH^- in the balanced equation are respectively

A. 4,1,7

B. 7,4,1

C. 4,1,10

D. 1,4,10

Answer: C

Watch Video Solution

16. A solution containing Cu^{+2}, $C_2O_4^{-2}$ ions: The solution requires 22.6 mL of 0.02 $MKMnO_4$ in the presence of H_2SO_4 for oxidation. The resulting solution is neutralized and added excess KI. The iodine is liberated according to this equation $Cu^{2+} + I^- \rightarrow Cu_2I_2$ The iodine liberated requires 11.3 mL of 0.05 M $Na_2S_2O_3$ solution. The molar ratio of Cu^{2+}, $C_2O_4^{-2}$ in solution is

A. $1:1$

B. $1:2$

C. $2:1$

D. $1:3$

Answer: B

Watch Video Solution

17. 2 mole of $FeSO_4$ in acidic medium are oxidised by 'X' mole of $KMnO_4$ whereas 2 mole of FeC_2O_4 are oxidised by 'Y' mole of $KMnO_4$. The ratio of 'X' and 'Y' is:

A. $1:3$

B. $1:2$

C. $1:4$

D. $1:5$

Answer: A

Watch Video Solution

18. A solution of $0.1MKMnO_4$ is used for the reaction $S_2O_3^{-2} + 2MnO_4^- + H_2O \rightarrow MnO_2 + SO_4^{-2} + OH^-$ .The volume of $KMnO_4$ requires to react $0.158g$of $Na_2S_2O_3$ is (MW=158) :

A. 13.33 mL

B. 6.66 mL

C. 3.33 mL

D. 26.67 mL

Answer: D

Watch Video Solution

19. $C_2O_4^{2-} + MnO_4^- \xrightarrow{H^+} Mn^{2+} + CO_2$

The number of H^+ ions in the balanced equation of the above redox reaction is

A. 8

B. 16

C. 4

D. 2

Answer: B

Watch Video Solution

20. In the standardization of $Na_2S_2O_3$ using $K_2Cr_2O_7$ by iodometry, the equivalent mass of $K_2Cr_2O_7$ is

A. (molar mass)/2

B. (molar mass)/6

C. (molar mass)/3

D. same as molar mass

Answer: B

Watch Video Solution

21. In redox reaction, $Ba(MnO_4)_2$ oxidizes $K_4\left[Fe(CN)_6\right]$ into Fe^{3+}, CO_3^{2-} and NO_3^- ions in acidic medium, where $Ba(MnO_4)_2$ itself reduces into Mn^{+2}, then how many moles of $Ba(MnO_4)_2$ will react with 1 mole of $K_4\left[Fe(CN)_6\right]$

A. 61

B. 1.6

C. 6.1

D. 61.1

Answer: C

Watch Video Solution

22. When I^- is oxidised by MnO_4^- in alkaline medium, I^- converts into

A. IO_3^-

B. I_2

C. IO_4^-

D. IO^-

Answer: A

Watch Video Solution

23. Consideratitration of potassium dichromate solution with acidified Mohr's salt solution using diphenylamine as indicator. The number of moles of Mohr's salt required per mole of dichromate is

A. 3

B. 4

C. 5

D. 6

Answer: D

Watch Video Solution

24. Amount of oxalic acid present in a solution can be determined by its titration with $KMnO_4$ solution in the presence of H_2SO_4. The titration gives unsatisfactory result when carried out in the presence of HCl, because HCl

A. gets oxidized by oxalic acid to chlorine

B. furnishes H^+ ions in addition to those from oxalic acid.

C. reduces permanganate to Mn^{2+}

D. oxidizes oxalic acid to carbon dioxide and water

Answer: C

Watch Video Solution

25. In the oxidation of sulphite to sulphate using permanganate, the number of H^+ ions in the balanced equation is:

A. 5

B. 2

C. 6

D. 3

Answer: C

Watch Video Solution

26. Which ordering of compounds is according to the decreasing order of the oxidation state of nitrogen?

A. HNO_3, NO, NH_4Cl, N_2

B. HNO_3, NO, N_2, NH_4Cl

C. HNO_3, NH_4Cl, NO, N_2

D. NO, HNO_3, NH_4Cl, N_2

Answer: B

Watch Video Solution

27. In which of the following reactions H_2O_2 acts as a reducing agent?

$i) H_2O_2 + 2H^+ + 2e^- \rightarrow 2H_2O$ $\quad ii) H_2O_2 - 2e^- \rightarrow O_2 + 2H^+$

$iii) H_2O_2 + 2e^- \rightarrow 2OH^-$ $\quad iv) H_2O_2 + 2OH^- - 2e^- \rightarrow O_2 + 2H_2O$

A. a,c

B. b, d

C. a, b

D. c, d

Answer: B

Watch Video Solution

28. The oxidation state of nitrogen is correctly given for

A.

Compound	Oxidation state
$[Co(NH_3)_5Cl]Cl_2$	0

B.

Compound	Oxidation state
NH_2OH	-2

C.

Compound	Oxidation state
$(N_2H_5)_2SO_4$	$+2$

D.

Compound	Oxidation state
Mg_3N_2	-3

Answer: D

Watch Video Solution

29. In the reaction,

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

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

Answer: D

Watch Video Solution

30. Which of the following is not a disproportionation reaction?

$$I) NH_4NO_3 \xrightarrow{\text{Å}} N_2O + H_2O \qquad II) P_4 \xrightarrow{\text{Å}} PH_3 + HPO_2^{\ominus}$$

$$III) PCl_5 \xrightarrow{\text{Å}} PCl_3 + Cl_2 \qquad IV) IO_3^{\ominus} + I^{\ominus} \rightarrow I_2$$

A. I, II

B. I, III, IV

C. II, IV

D. I, III

Answer: B

Watch Video Solution

31. When $KMnO_4$ acts as an oxidising agent and ultimately form MnO_4^{2-}, MnO_2, Mn_2O_3, and Mn^{2+}, then the numbers of electrons transferred in each case, respectively, are

A. 4, 3, 1, 5

B. 1,5, 3, 7

C. 1,3,4,5

D. 3, 5, 7, 1

Answer: C

Watch Video Solution

32. The oxidation states of the most electronegative element in the products of the reaction between BaO_2 and H_2SO_4 are

A. 0 and 1

B. -1 and -2

C. -2 and 0

D. -2 and $+1$

Answer: B

Watch Video Solution

33. In the compound $YBa_2Cu_3O_7$ which shows super conductivity, what is the oxidation state of Cu? Assume that the rare earth element yttrium is in its usual +3 oxidation state.

A. $+\frac{7}{3}$

B. $-\frac{7}{3}$

C. $\frac{5}{3}$

D. $-\frac{5}{3}$

Answer: A

Watch Video Solution

34. Oxidation states of the metal in the minerals haematite and magnetite, respectively, are

A. II, III in haematite and III in magnetite

B. II, III in haematite and II in magnetite

C. II in haematite and II, III in magnetite

D. III in haematite and II, III in magnetite

Answer: D

Watch Video Solution

35. Which of the following can act as an oxidising agent as well as a reducing agent?

1. H_2O_2 2. H_2S 3. SO_2 4. HNO_2

A. 1,2,3

B. 2,3,4

C. 1,3,4

D. All

Answer: C

Watch Video Solution

36. In balancing the half reaction, $CN^{\Theta} \rightarrow CNO^{\Theta}$ (skeletal)

The number of electrons that must be added is

A. 1 on the right

B. 0

C. 1 on the left

D. 2 on the right

Answer: D

Watch Video Solution

37. In which of the following pairs of compounds, nitrogen has maximum positive and maximum negative values of oxidation number?

A. NH_3 and HN_3

B. HNO_3 and HCN

C. N_2O and NH_2OH

D. N_2O_4 and NO_2

Answer: B

Watch Video Solution

38. In the reaction $C_2H_5OH + xI_2 + 6OH^- \rightarrow CHI_3 + HCO_2^- + yI^- + 5H_2O$ the value of x and y, respectively, are

A. 2,1

B. 3,3

C. 4,5

D. 5,7

Answer: C

Watch Video Solution

39. The stoichiometric numbers appearing from left to right in the reaction

$MnO_4^{2-} + H^+ \rightarrow MnO_4^- + MnO_2 + H_2O$ are

A. 3, 2, 2, 1,2

B. 3, 4, 2, 1, 2

C. 2, 4, 1, 2, 2

D. 2, 3, 1, 1, 2

Answer: B

Watch Video Solution

40. Oxidation number of oxygen in potassium superoxide is

A. -0.5

B. 1

C. -1.5

D. 2

Answer: A

Watch Video Solution

41. Given are the nickel compounds $Ni(CO_4)$, $K_2[NiF_6)$ and $K_2\left[Ni(CN)_4\right]$. The order of compounds having increasing oxidation number of nickel is : $Ni(CO)_4 < K_2[NiF_6] < K_2\left[Ni(CN)_4\right]$,

$Ni(CO)_4 < K_2\left[Ni(CN)_4\right] < K_2[NiF_6]$,

$K_2\left[Ni(CN)_6\right] < K_2[NiF_6] < Ni(CO)_4$,

$K_2\left[Ni(CN)_6\right] < Ni(CO)_4 < K_2[NiF_6]$

A. $Ni(CO)_4 < K_2[NiF_6] < K_2\left[Ni(CN)_4\right]$

B. $Ni(CO)_4 < K_2\left[Ni(CN)_4\right] < K_2[NiF_6]$

C. $K_2\left[Ni(CN)_6\right] < K_2[NiF_6] < Ni(CO)_4$

D. $K_2\left[Ni(CN)_6\right] < Ni(CO)_4 < K_2[NiF_6]$

Answer: B

Watch Video Solution

42. Which one of the following equations represents a redox reaction?

A. $PCl_3 + 3H_2O \rightarrow H_3PO_3 + 3HCl$

B. $2NF_2H + 2KF \rightarrow 2KHF_2 + N_2F_2$

C. $NI_3 + 3H_2O + HI \rightarrow 2HOI + NH_4OH + I_2$

D. $2KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2KNO_3$

Answer: C

Watch Video Solution

43. In the reaction $Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + NaI$(not balanced), which of the following is/are true?

I) $Na_2S_2O_3$ is a reducing agent

II) Iodine is an oxidizing agent

III) It is an example of intermolecular redox reaction

IV) In $Na_2S_4O_6$, the average oxidation state of S is (+5/2)

A. I, II, IV

B. I, II

C. I, II, III

D. I, II, III, IV

Answer: D

Watch Video Solution

44. How many electrons are involved in the following redox reaction?

$Cr_2O_7^{2-} + Fe^{2+} + C_2O_4^{2-} \rightarrow Cr^{3+} + Fe^{3+} + CO_2$ (acidic medium)

A. 3

B. 4

C. 6

D. 5

Answer: C

Watch Video Solution

45. Consider the chemical change which is occuring in basic medium :

$ClO_3^- + N_2H_4 \rightarrow NO + Cl^- + H_2O$

The correct statement is

A. N_2H_4 is acting as an oxidizing agent in the reaction

B. 3 mol of N_2H_4 are required per mole of ClO_3^-

C. The electrons transferred per mol of N_2H_4 reduce 1.33 mol of ClO_3^-

D. 5 mol of electrons are gained by per mole of ClO_3^-

Answer: C

Watch Video Solution

46. Consider the redox reaction in acidic medium:

$Mn^{2+} + BiO_3^- \rightarrow MnO_4^- + Bi^{3+}$ .Choose the correct statement from the following:

A. The total electrons involved in the balanced chemical equation is 5

B. Two moles of electrons are donated by per mole of BiO_3^-

C. 2.8 mol of H^+ are required for the change one mole of BiO_3^- to Bi^{3+}

D. Acid is used as reducing agent in this reaction

Answer: C

Watch Video Solution

47. How many moles of $KMnO_4$ are required in the acidic medium for complete oxidation of 15 mol of $FeSO_4$?

A. 2

B. 3

C. 4

D. 5

Answer: B

Watch Video Solution

48. When copper is treated with a certain concentration of nitric acid, nitric oxide and nitrogen dioxide is liberated in equal volumes according to the equation, $xCu + yHNO_3 \rightarrow Cu(NO_3)_2 + NO + NO_2 + H_2O$. The coefficient of 'x' and 'y' are

A. 2 and 3

B. 2 and 6

C. 1 and 3

D. 3 and 8

Answer: B

Watch Video Solution

49. If 2.68×10^{-3}mol of a solution containing an ion A^{n+} requires 1.6×10^{-3} mol of MnO_4^- for the oxidation of A^{n+} to AO_3^- in acid medium, what is the value of n?

A. 3

B. 5

C. 2

D. 4

Answer: C

Watch Video Solution

50. Consider the reaction:

$H_2SO_3(aq) + Sn^{4+}(aq) + H_2O(l) \rightarrow Sn^{2+}(aq) + HSO_4^-(aq) + 3H^+(aq$

Which of the following statements is correct?

A. Sn^{4+} is the oxidizing agent because it undergoes oxidation

B. Sn^{4+} is the reducing agent because it undergoes oxidation

C. H_2SO_3 is reducing agent because it undergoes oxidation

D. H_2SO_3 is the oxidising agent because it undergoes reduction

Answer: C

Watch Video Solution

Level Ii Assertion Reason Type

1. Assertion : Conversion of potassium ferrocyanide to potassium ferricyanide is an oxidation process.

Reason : Oxidation is the addition of an electronegative element to a substance or removal of an electropositive element from a substance. : If both (A) and (R) are correct and (R) is the correct explanation of (A)., If both (A) and (R) are correct, but (R) is not the correct explanation of (A)., If (A) is correct, but (R) is incorrect., If both (A) and (R) are incorrect.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

2. Assertion : Displacement reactions of chlorine, bromine and iodine using fluorine are not generally carried out in aqueous solution.

Reason : Fluorine being highly reactive attacks water and displaces the oxygen of water. : If both (A) and (R) are correct and (R) is the correct explanation of (A)., If both (A) and (R) are correct, but (R) is not the correct explanation of (A),. If (A) is correct, but (R) is incorrect., If both (A) and (R) are incorrect.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

3. Assertion : All halogens undergo disproportionation reaction in alkaline medium.

Reason : All halogens exhibit variable oxidation states. If both (A) and (R) are correct and (R) is the correct explanation of (A)., If both (A) and (R) are correct, but (R) is not the correct explanation of (A)., If (A) is correct, but (R) is incorrect., If both (A) and (R) are incorrect.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: D

Watch Video Solution

4. Assertion : ClO_4^- does not show disproportionation reaction.

Reason : In ClO_4^-, chlorine is present in its highest oxidation state.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

5. Assertion : Oxygen atom in both, O_2 and O_3 has an oxidation number of -2.

Reason : Oxygen is assigned an oxidation number-2 in all of its compounds.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: D

Watch Video Solution

6. Assertion : Nitrous acid (HNO_3) may act as an oxidising as well as a reducing agent.

Reason : The oxidation number of nitrogen remains same in all the compounds.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: C

Watch Video Solution

7. Assertion : Oxidation number of carbon in CH_2O is zero.

Reason : CH_2O, formaldehyde, is a covalent compound.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: B

Watch Video Solution

8. Assertion : Copper forms complexes $[CuCl_4]^{2-}$ but not $[CuI_4]^{2-}$.

Reason . $[CuI_4]^{2-}$ is not stable because Cu^{2+} is oxidant and I^- is reductant.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

9. Assertion : In azide ion average oxidation number of N is -1/3.

Reason : In azide ion two Natoms have zero oxidation number and one has oxidation number-1.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

10. Assertion : If a strong acid is added to a solution of potassium chromate it changes its colour from yellow to orange.

Reason : The colour change is due to the oxidation of potassium chromate.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: C

Watch Video Solution

11. Assertion : Hydrogen peroxide acts only as oxidising agent.

Reason : All peroxides behave as the oxidising agent only.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: D

Watch Video Solution

12. Assertion : Iodine shows oxidation state of +1 and +3 in the compounds ICl and ICl_3 respectively.

Reason : Iodine coming below the halogens F, Cl and Br in the halogen group of elements in the periodic table shows a higher degree of electropositive nature.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

13. Assertion : Among halogens fluorine is the best oxidant.

Reason : Fluorine is the most electronegative atom.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

14. Assertion : In the reaction between potassium permanganate and potassium iodide, permanganate ions act as oxidising agent .

Reason : Oxidation state of manganese changes from +2 to +7 during the reaction.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: C

Watch Video Solution

15. Assertion : The decomposition of hydrogen peroxide to form water and oxygen is an example of disproportionation reaction.

Reason : The oxygen of peroxide is in-1 oxidation state and it is.converted to zero oxidation state in O_2 and -2 oxidation state in H_2O.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

16. Assertion : H_2SO_4 cannot act as reducing agent.

Reason : Sulphur cannot increase its oxidation number beyond +6.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

17. Assertion : $HClO_4$ is a stronger acid than $HClO_3$

Reason : Oxidation state of chlorine in $HClO_4$ is +7 and in $HClO_3$ is +5.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

18. Assertion : N atom has two different oxidation states in NH_4NO_2.

Reason : One N atom has-ve oxidation number, as it is attached with less electronegative H atom andother has +ve oxidation number as it is attached with more electronegative atom.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

19. Assertion : SO_2 can be used as reductant as well as oxidant.

Reason : The oxidation number of S is +4 in SO_2 which lies in between its minimum (-2) and maximum (+6) values .

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: A

Watch Video Solution

20. Assertion : The two Fe atoms in Fe_3O_4, have different oxidation numbers.

Reason : Fe^{2+} ions decolourise $KMnO_4$ solution.

A. If both (A) and (R) are correct and (R) is the correct explanation of (A).

B. If both (A) and (R) are correct, but (R) is not the correct explanation of (A).

C. If (A) is correct, but (R) is incorrect.

D. If both (A) and (R) are incorrect.

Answer: B

Watch Video Solution

Question

1. Find out the oxidation number of

$C \text{ in } CO_2$

Watch Video Solution

2. Find out the oxidation number of

$Cr \text{ in} Cr_2O_7^{2-}$

Watch Video Solution

3. Find out the oxidation number of

$Pb \text{ in } Pb_3O_4$

Watch Video Solution

4. What is the oxidation number of iodine in the following compound:

KI

Watch Video Solution

5. What is the oxidation number of iodine in the following compound:

I_2

Watch Video Solution

6. What is the oxidation number of iodine in the following compounds:

ICl

Watch Video Solution

7. What is the oxidation number of iodine in the following compounds:

IF_5

Watch Video Solution

8. What is the oxidation number of iodine in the following compounds:

HIO_4

Watch Video Solution

9. Find the oxidation number of Mn, Cr and Cl in $KMnO_4$, $K_2Cr_2O_7$ and $KClO_4$ respectively.

Watch Video Solution

10. Valency of C is 4 but its O.N. vary from -4 to +4. is it true or false?

Watch Video Solution

11. Write the net ionic equation for the reaction of potassium dichromate (VI), $K_2Cr_2O_7$ with ferrous sulphate $(FeSO_4)$ in sulphuric acid to ferric $\left(Fe^{3+}\right)$ ion and chromium(III) ion.

Watch Video Solution

12. Permanganate ion reacts with bromide ion in basic medium to give manganese dioxide and bromate ion. Write the balanced equation for the reaction using oxidation number method.

Skeletal equation is

$MnO_4^- + Br^- \rightarrow MnO_2 + BrO_3^-$

Watch Video Solution

13. Write the balanced ionic equation for the reaction of zinc with conc. nitric acid to produce zinc nitrate, nitrogen dioxide and water:

Watch Video Solution

14. Write ionic equation for the reaction between $Cr_2O_7^{2-}$ ions and Fe^{2+} ions in acidic medium?

Watch Video Solution

15. Give the balanced ionic equation for the oxidation of I^- by MnO_4^- ions in basic medium to produce molecular iodine (I_2) and manganese (IV) oxide (MnO_2).

Watch Video Solution

Level I

1. In which SO_2 acts as oxidant, while reacting with:

A. acidified $KMnO_4$

B. acidified $K_2Cr_2O_2$

C. H_2S

D. acidified C_2H_5OH

Answer: C

Watch Video Solution

2. Oxidation number of carbon in C_3O_2, Mg_2C_3 are respectively:

A. $-4/3,\ +4/3$

B. $+4/3,\ -4/3$

C. $-2/3,\ +2/3$

D. $-2/3,\ +4/3$

Answer: B

Watch Video Solution

3. A sulphur containing species that cannot be an oxidising agent is :

$H_2SO_4, H_2S, SO_2, H_2SO_3$

A. H_2SO_4

B. H_2S

C. SO_2

D. H_2SO_3

Answer: B

Watch Video Solution

4. The oxidation number of Cr in $\left[Cr(NH_3)_4Cl_2\right]^+$ is:

A. $+3$

B. $+2$

C. $+1$

D. zero

Answer: A

Watch Video Solution

5. The oxidation states of the most electronegative element in the products of the reaction between BaO_2 and H_2SO_4 are

A. 0 and -1

B. -1 and -2

C. -2 and 0

D. -2 and $+1$

Answer: B

Watch Video Solution

6. In which of the following compounds, the oxidation number of iodine is fractional?

A. IF_7

B. I_3^-

C. IF_5

D. IF_5

Answer: B

Watch Video Solution

7. Which of the following processes does not involve oxidation of iron?

A. Decolourization of blue $CuSO_4$ solution by iron

B. Formation of $Fe(CO)_5$ from Fe

C. Liberation of H_2 from steam by iron at high temperature

D. Rusting of iron sheets

Answer: B

Watch Video Solution

8. MnO_4^{2-} undergoes disproportionation reaction in acidic medium but MnO_4^- does not because

A. In MnO_4^{3-} Mn is in intermediate oxidation state

B. In MnO_4^- ,Mn is in lowest oxidation state

C. In Mno_4^- Mn is in intermediate oxidation state

D. None of the above

Answer: A

Watch Video Solution

9. In half reaction: $S_2O_3^{2-} \rightarrow S_4O_6^{2-}$ .The number of electrons that must be added:

A. 2, on right side

B. 2, on left side

C. 3, on right side

D. 4, on left side

Answer: A

Watch Video Solution

10. Which of the following chemical reactions depicts the oxidizing behaviour of H_2SO_4 ?

A. $2HI + H_2SO_4 \rightarrow I_2SO_2 + 2H_2O$

B. $Ca(OH)_2 + H_2SO_4 \rightarrow CaSO_4 + 2H_2O$

C. $NaCl = H_2SO_4 \rightarrow NaHSO_4 + HCI$

D. $2PCl_5 + H_2SO_4 \rightarrow 2POCl_5 + 2HCl + SO_2Cl_2$

Answer: A

Watch Video Solution

11. In which of the following changes, there is transfer of five electrons?

A. $MnO_4^- \rightarrow MnMn^{2+}$

B. $CrO_4^{2-} \rightarrow Cr^{3+}$

C. $MnO_4^{2-} \rightarrow MnO_2$

D. $Cr_2O_7^{2-} \rightarrow 2Cr^{3+}$

Answer: A

Watch Video Solution

12. The following reaction describes the production of metallic iron: $2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$ How many electrons are lost by each carbon atom in this reaction?

A. 1

B. 2

C. 3

D. 4

Answer: D

Watch Video Solution

13. The correct order of compounds in the decreasing order based on the oxidation state of oxygen in them is

A. $OF_2 > HOF > KO > Sr(IO_3)_2$

B. $OF_2 > KO_2HOF > Sr(IO_3)_2$

C. $HOF > KO_2 > Sr(IO_3)_2 > OF_2$

D. $KO_2 > OF_2 > HOFgSr(IO_3)_2$

Answer: A

Watch Video Solution

14. Which products are expected from the disproportionation of hypochlorous acid

A. $HClO_3$ and Cl_2O

B. $HClO_2$ and $HClO_4$

C. HCl and Cl_2O

D. HCl and $HClO_3$

Answer: D

Watch Video Solution

15. The equivalent mass of oxidising agent in the following reaction is, $SO_2 + 2H_2S \rightarrow 3S + 2H_2O$

A. 32

B. 64

C. 16

D. 8

Answer: C

Watch Video Solution

16. Complete the balancing of the following half reaction, taking place in basic media, $Br^-(aq) \rightarrow BrO_3^-(aq)$How many electrons are needed to balance it?

A. 2 electrons, left side

B. 2 electrons, right side

C. 4 electrons, right side

D. 6 electrons, right side

Answer: D

Watch Video Solution

17. Consider the metals: Mn, Mg, Zn, Ag, Cu. Based on their reactivity order, pick the correct statement

A. All five metals produce hydrogen gas on reacting with acids

B. Ag will substitute Cu from its aqueous solution

C. Mn will substitute Zn from its aqueous solution

D. Cu will substitute Mg from its aqueous solution

Answer: C

Watch Video Solution

18. SO_2 under atmospheric condition changes to SO_x^{2-} .If oxidation number of S is +6, what is the value of x in SO_x^{2-} ?

A. 1

B. 2

C. 3

D. 4

Answer: D

Watch Video Solution

19. Equivalent weight of H_3PO_2 (molecular weight=M) when it disproportionates into PH_3 and H_3PO_3 is

A. M

B. M/2

C. M/4

D. 3M/4

Answer: D

Watch Video Solution

20. In the reaction,

$$C_4H_{10(l)} + Cr_2O_{7(aq)}^{2-} + H_{(aq)}^{+} \rightarrow H_6C_4O_{4(s)} + Cr_{(aq)}^{3+} + H_2O_{(l)}$$

the change in the oxidation number of the chromium atom is

A. a decrease by six units

B. a decrease by three units

C. an increase by three units

D. an increase by five units

Answer: B

Watch Video Solution

21. Number of moles of $K_2Cr_2O_7$, reduced by one mole of Sn^{2+} ions is:

A. $1/3$

B. $1/6$

C. $2/3$

D. 1

Answer: A

Watch Video Solution

22. In the alkaline medium, the colour of potassium dichromate solution changes from orange to yellow due to the formation of potassium chromate. What is the change in oxidation state of chromium?

A. 1

B. 2

C. 3

D. 0

Answer: D

Watch Video Solution

23. A compound contains atoms of three elements A, B, and C. If the oxidation number of A is +2, B is +5 and that of C is–2, the possible formula of the compound is

A. $A_3(BC_4)_2$

B. $A_3(B_4C)_2$

C. ABC_2

D. $A_3(BC_3)_2$

Answer: A

Watch Video Solution

24. H_2O_2 acts as a reducing agent in

A. $FeCl_2 + HCl + H_2O \rightarrow FeCl_3 + H_2O$

B. $Cl_2 + H_2O_2 \rightarrow 2Hcl + O_2$

C. $2HI + H_2O \rightarrow I_2 + H_2O$

D. $H_2SO_3 + H_2O_2 \rightarrow H_2SO_4 + H_2O$

Answer: B

Watch Video Solution

25. Oxidation number of S in H_2SO_5 is

A. $+8$

B. $+6$

C. $+4$

D. $+2$

Answer: B

Watch Video Solution

26. Which one is not correct about the change given below?

$K_4\left[Fe(CN)_6\right] \xrightarrow{\text{oxi}} Fe^{3+} + CO_2 + NO_3^-$

A. Fe is oxidised Fe^{2+} to Fe^{3+}

B. Carbon is oxidised from c^{2+} to c^{4+}

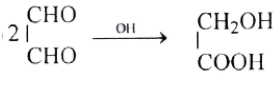
C. N is oxidised from N^3 to N^{5+}

D. Carbon is not oxidised

Answer: D

Watch Video Solution

27. Which of the following isintermolecular redox reaction?

A. 

B. $2C_6H_5CHO \xrightarrow{Al(OC_2H_5)_3} C_6H_5COOH + C_6H_5CH_2OH$

C. $4CrO_5 + 6H_2SO_4 \rightarrow 2Cr_2(SO_4)_3 + 6H_2O + 7O_2$

D. $As_2S_3 + HNO_3 \rightarrow H_3AsO_4 + H_2SO_4 + NO$

Answer: D

Watch Video Solution

28. The oxidation number of sulphur in S_8, S_2F_2 and H_2S are:

A. $0, \ +1 \ \text{and} \ -2$

B. $+1, \ +1 \ \text{and} \ -2$

C. $0, \ +1, \ \text{and} \ +2$

D. $-2, \ +1 \ \text{and} \ -2$

Answer: A

Watch Video Solution

29. In a reaction, 4 mole of electrons are transferred to 1 mole of HNO3, the possible productobtained due to reduction is:

A. 0.5 mole of N_2

B. 0.5 mole of N_2O

C. 1 mole of NO_2

D. 1 mole of NH_3

Answer: B

Watch Video Solution

30. The colour of $K_2Cr_2O_7$changes from red-orange to lemon yellow on treatment with aq.KOH because of:

A. Reduction of Cr (VI) to Cr(III)

B. Formation of chromium hydroxide

C. Conversion of dichromate into chromate ion

D. Oxidation of potassium hydroxide to potassium peroxide

Answer: C

Watch Video Solution

31. One mole of hydrazine (N_2H_4) loses 10 moles of electrons in a reaction to form a new compound X. Assuming that all the nitrogen atoms in hydrazine appear in the new compound, what is the oxidation state of nitrogen in X ? (Note There is no change in the oxidation state of hydrogen in the reaction)

A. -1

B. -3

C. $+3$

D. $+5$

Answer: C

Watch Video Solution

32. For the redox reaction,

$$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$$

The correct coefficients of the reactants for the balanced reaction are:

Watch Video Solution

33. The oxidation state of chromium in the final product formed in the reaction between KI and acidified potassium dichromate solution is

A. $+4$

B. $+6$

C. $+2$

D. $+3$

Answer: D

Watch Video Solution

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

A. MnO_4^-

B. $Ce(CN)_6^{3-}$

C. NiF_6^{2-}

D. CrO_2Cl_2

Answer: D

Watch Video Solution

35. The reaction of white phosphorous with aqueous NaOH gives phsophine along with another phosphorous containing compound. The reaction type, the oxidation states of phosphorous in phosphine and the other product are respectively:

A. redox reaction,–3 and -5

B. redox reaction, + 3 and + 5

C. disproportionation reaction, -3 and +1

D. disproportionation reaction, -3 and +3

Answer: C

Watch Video Solution

36. Hydrogen peroxide in its reaction with KIO_4 and NH_2OH respectively, is acting as a:

A. reducing agent, oxidising agent

B. reducing agent, reducing agent

C. oxidising agent, oxidising agent

D. oxidising agent, reducing agent

Answer: A

Watch Video Solution

37. Arrange the following in the increasing order of oxidation state of Mn:

$(i)Mn^{2+}$ $(ii)MnO_2$ $(iii)KMnO_4$ $(iv)K_2MnO_4$

A. $(i) > (ii) > (iii) > (iv)$

B. $(i) < (ii) < (iv) < (iii)$

C. $(ii) < (iii) < (i) < (iv)$

D. $(iii) < (i) < (iv) < (ii)$

Answer: B

Watch Video Solution

38. Which of the following has least oxidation state of Fe?

A. $K_3\left[Fe(OH)_6\right]$

B. $K_2[FeO_4]$

C. $FeSO_4(NH_4)_2SO_4.6H_2O$

D. $\left[Fe(CN)_6\right]^{3-}$

Answer: C

Watch Video Solution

39. In the reaction, $8Al + 3Fe_3O_4 \rightarrow 4Al_2O_3 + 9Fe$, the number of electrons transferred from reductant to oxidant is:

A. 8

B. 4

C. 16

D. 24

Answer: D

Watch Video Solution

40. In the balanced chemical reaction, $IO_3^- + aI^- + bH^+ \rightarrow cH_2O + dI_2$, a, b, c and d respectively correspond to:

A. 5, 6, 3,3

B. 5, 3, 6,3

C. 3,5, 3,6

D. 5, 6, 5,5

Answer: A

Watch Video Solution

41. In alkaline medium ClO_2 oxidises H_2O_2 to O_2 and itself gets reduced to Cl^- . How many moles of H_2O_2 are oxidized by 1 mole of ClO_2 ?

A. 1

B. 1.5

C. 2.5

D. 3.5

Answer: C

Watch Video Solution

42. The oxidation state of iodine in IPO_4 is

A. $+1$

B. $+3$

C. $+5$

D. $+7$

Answer: B

Watch Video Solution

43. In alkaline medium, H_2O_2 reacts with Fe^{3+} and Mn^{2+} separately to give:

A. Fe^{4+} and Mn^{4+}

B. Fe^{2+} and Mn^{2+}

C. Fe^{3+} and Mn^{4+}

D. Fe^{4+} and Mn^{2+}

Answer: C

Watch Video Solution

44. When hydrogen peroxide is added to acidified potassium dichromate, a blue colour is produced due to formation of

A. CrO_3

B. Cr_2O_3

C. CrO_5

D. CrO_4^{2-}

Answer: C

Watch Video Solution

45. Number of moles of MnO_4^- required to oxidise one mole of ferrous oxalate completely in acid medium will be:

A. 7.5 moles

B. 0.2 moles

C. 0.6 moles

D. 0.4 moles

Answer: D

Watch Video Solution

46. Freshly prepared, bright blue coloured solution of sodium in liquid ammonia can be used to reduce the organic functional moieties. In this, the actual reducing species is:

A. $\left[Na(NH_3)_n\right]^+$

B. $\left[H_2(NH_3)_n\right]$

C. $\left[NaNH_2(NH_3)_n\right]$

D. $\left[e(NH_3)_n\right]^-$

Answer: D

Watch Video Solution

47. The oxidation number of nitrogen atoms in NH_4NO_3 are

A. $+3,\ +3$

B. $+3,\ -3$

C. $-3,\ +5$

D. $-5, +3$

Answer: C

Watch Video Solution

48. When methane is burnt in oxygen to produce CO_2 and H_2O, the oxidation number of carbon changes by:

A. -8

B. zero

C. $+8$

D. $+4$

Answer: C

Watch Video Solution

49. Which of the following reactions do not involve oxidation reduction?

I) $2Cs + 2H_2O \rightarrow 2CsOH + H_2$

II) $2CuI_2 \rightarrow 2CuI + I_2$

III) $NH_4Br + KOH \rightarrow KBr + NH_3 + H_2O$

IV) $4KCN + Fe(CN)_2 \rightarrow K_4[Fe(CN)_6]$

A. I, II

B. I, III

C. I, III, IV

D. III, IV

Answer: D

Watch Video Solution

50. In which of the following pairs is there the greatest difference in the oxidation numbers of the underlined elements?

A. NO_2 and N_2O_4

B. SO_3^{2-} and SO_4^{2-}

C. S^{2-} and $S_2O_3^{2-}$

D. S^{2-} and SO_4^{2-}

Answer: D

Watch Video Solution

Level Ii

1. Which of the following is not a disproportionation reaction?

A. $P_4 + 5\overset{\ominus}{O}H \rightarrow H_2PO_2^{\ominus} + PH_3$

B. $Cl_2 + \overset{\ominus}{O}H \rightarrow Cl^{\ominus} + ClO^{\ominus}$

C. $2H_2O_2 \rightarrow 2H_2O + O_2$

D. $Na_2O_2 + 2H_2O \rightarrow 2NaOH + H_2O_2$

Answer: D

Watch Video Solution

2. When SO_2 is passed through acidified solution of potassium dichromate, then chromium sulphate is formed. The change in oxidation number of chromium is:

A. $+4$ to $+2$

B. $+5$ to +3

C. $+6$ to $+3$

D. $+7$ to +2

Answer: C

Watch Video Solution

3. Excess of KI reacts with $CuSO_4$ solution and then $Na_2S_2O_3$ solution is added to it. Which of the statement is incorrect in this reaction?

A. Evolved I, is reduced

B. CuI_2 is formed

C. $Na_2S_2O_3$is oxidised

D. $Cu_2I_2$is formed

Answer: B

Watch Video Solution

4. The value of 'n' in, $MnO_4^- + 8H^+ + ne \rightarrow Mn^{2+} + 4H_2O$ is:

A. 5

B. 4

C. 3

D. 2

Answer: A

Watch Video Solution

5. When Sn (IV) chloride is treated with excess HCl, the complex $[SnCl_6]^{2-}$ is formed. The oxidation state of Sn in this complex is:

A. $+6$

B. -2

C. $+4$

D. -5

Answer: C

Watch Video Solution

6. A compound of Xe and F is found to have 53.3% Xe. Oxidation number of Xe in this compound is:

A. -4

B. zero

C. $+4$

D. $+6$

Answer: D

Watch Video Solution

7. When the ion $Cr_2O_7^{2-}$ acts as an oxidant in acidic aqueous solution the ion Cr^{3+} is formed. How many mole of Sn^{2+} would be oxidised to Sn^{4+} by one mole of $Cr_2O_7^{2-}$ ions?

A. $2/3$

B. $3/2$

C. 2

D. 3

Answer: D

Watch Video Solution

8. In a reaction, 4 mole of electrons are transferred to 1 mole of HNO3, the possible productobtained due to reduction is:

A. (1/2) mole N_2

B. (1/2)mole N_2O

C. mole of NO_2

D. 1 mole NH_3

Answer: B

Watch Video Solution

9. $NaIO_3$ reacts with $NaHSO_3$ according to equation: $IO_3^- + 3HSO_3^- \rightarrow I^- + 3H^+ + 3SO_4^{2-}$. The weight of $NaHSO_3$ required to react with 100 mL of solution containing 0.66 g of $NaIO_3$ is

A. 5.2 g

B. 4.57 g

C. 2.3 g

D. 1.04 g

Answer: D

Watch Video Solution

10. The values of'x' and 'y'in the following redox reaction are: -

$$xCI_2 + 6OH^- \rightarrow ClO_3^- + yCl^- + 3H_2O$$

A. x = 2, y = 4

B. x = 5, y = 3

C. x=3, y=5

D. x = 4, y = 2

Answer: C

Watch Video Solution

11. A mixture of potassium chlorate, oxalic acid and sulphuric acid is heated. During the reaction which element undergoes maximum change in the oxidation number?

A. Cl

B. C

C. S

D. H

Answer: A

Watch Video Solution

12.

$i) H_2O_2 + O_3 \rightarrow H_2O + 2O_2 \quad ii) H_2O_2 + Ag_2O \rightarrow 2Ag + H_2O + O_2$

Role of hydrogen peroxide'in the above reactions is respectively:

A. oxidizing in(i) and reducing in(ii)

B. reducing in (i) and oxidizing in (ii)

C. reducing in (i) and (ii)

D. oxidizing in(i) and (ii)

Answer: C

Watch Video Solution

13. In the unbalanced reaction:

$$Al + KMnO_4 + H_2SO_4 \rightarrow K_2SO_4 + Al_2(SO_4)_3 + MnSO_4 + H_2O$$

If the stoichiometric coefficients of $Al, H_2SO_4 MnSO_4$ and H_2O are w,x,yand z respectively, the numerical value are

A. 2.0

B. 1.6

C. 1.2

D. 2.4

Answer: B

Watch Video Solution

14. The oxidation number of carbon is zero in

$I)HCHO \quad II)CH_2CI_2 \quad III)C_6H_{12}O_6 \quad IV)C_{12}H_{22}O_{11}$

A. I,II only

B. I,II ,III only

C. All

D. None

Answer: C

Watch Video Solution

15. For the redox reaction, $Zn + NO_3^- \rightarrow Zn^{2+} + NH_4^+$ in basic medium, the coefficients of Zn, NO_3^- and OH^- in the balanced

equation are respectively

A. 4,1,7

B. 7,4,1

C. 4,1,10

D. 1,4,10

Answer: C

Watch Video Solution

16. A solution containing Cu^{+2}, $C_2O_4^{-2}$ ions: The solution requires 22.6 mL of 0.02 $MKMnO_4$ in the presence of H_2SO_4 for oxidation. The resulting solution is neutralized and added excess KI. The iodine is liberated according to this equation $Cu^{2+} + I^- \rightarrow Cu_2I_2$ The iodine liberated requires 11.3 mL of 0.05 M $Na_2S_2O_3$ solution. The molar ratio of Cu^{2+}, $C_2O_4^{-2}$ in solution is

A. $1:1$

B. $1:2$

C. $2:1$

D. $1:3$

Answer: B

Watch Video Solution

17. 2 mole of $FeSO_4$ in acidic medium are oxidised by 'X' mole of $KMnO_4$ whereas 2 mole of FeC_2O_4 are oxidised by 'Y' mole of $KMnO_4$. The ratio of 'X' and 'Y' is:

A. $1:3$

B. $1:2$

C. $1:4$

D. $1:5$

Answer: A

Watch Video Solution

18. A solution of $0.1MKMnO_4$ is used for the reaction $S_2O_3^{-2} + 2MnO_4^- + H_2O \rightarrow MnO_2 + SO_4^{-2} + OH^-$ .The volume of $KMnO_4$ requires to react $0.158g$of $Na_2S_2O_3$ is (MW=158) :

A. $13.33mL$

B. $6.66mL$

C. $3.33mL$

D. $26.67mL$

Answer: D

Watch Video Solution

19. $C_2O_4^{2-} + MnO_4^- \xrightarrow{H^+} Mn^{2+} + CO_2$

The number of H^+ ions in the balanced equation of the above redox reaction is

A. 8

B. 6

C. 4

D. 2

Answer: B

Watch Video Solution

20. In the standardization of $Na_2S_2O_3$ using $K_2Cr_2O_7$ by iodometry, the equivalent mass of $K_2Cr_2O_7$ is

A. (molar mass)/2

B. (molar mass)/6

C. (molar mass)/3

D. same as molar mass

Answer: B

Watch Video Solution

21. In redox reaction, $Ba(MnO_4)_2$ oxidizes $K_4\left[Fe(CN)_6\right]$ into Fe^{3+}, CO_3^{2-} and NO_3^- ions in acidic medium, where $Ba(MnO_4)_2$ itself reduces into Mn^{+2} then how many moles of $Ba(MnO_4)_2$ will react with 1 mole of $K_4\left[Fe(CN)_6\right]$

A. 61

B. 1.6

C. 6.1

D. 61.1

Answer: C

Watch Video Solution

22. When I^- is oxidised by MnO_4^- in alkaline medium, I^- converts into

A. IO_3^-

B. I_2

C. IO_4^-

D. IO^-

Answer: A

Watch Video Solution

23. Consider a titration of potassium dichromate solution with acidified Mohr's salt solution using diphenylamine as indicator. The number of moles of Mohr's salt required per mole of dichromate' is

A. 3

B. 4

C. 5

D. 6

Answer: D

Watch Video Solution

24. Amount of oxalic acid present in a solution can be determined by its titration with $KMnO_4$ solution in the presence of H_2SO_4. The titration gives unsatisfactory result when carried out in the presence of HCl, because HCl

A. gets oxidized by oxalic acid to chlorine

B. furnishes H^+ ions in addition to those from oxalic acid

C. reduces permanganate to Mn^{2+}

D. oxidizes oxalic acid to carbon dioxide and water

Answer: C

Watch Video Solution

25. In the oxidation of sulphite to sulphate using permanganate, the number of H^+ ions in the balanced equation is:

A. 5

B. 2

C. 6

D. 3

Answer: C

Watch Video Solution

26. Which ordering of compounds is according to the decreasing order of the oxidation state of nitrogen?

A. HNO_3, NO, NH_4Cl, N_2

B. HNO_3, NO, N_2, NH_2Cl

C. HNO_3, NH_2Cl, NO, N_2

D. $NO, HNO_3NH_4ClN_2$

Answer: B

Watch Video Solution

27. In which of the following reactions H_2O_2 acts as a reducing agent?

$i) H_2O_2 + 2H^+ + 2e^- \rightarrow 2H_2O$ $ii) H_2O_2 - 2e^- \rightarrow O_2 + 2H^+$

$iii) H_2O_2 + 2e^- \rightarrow 2OH^-$ $iv) H_2O_2 + 2OH^- - 2e^- \rightarrow O_2 + 2H_2O$

A. a,c

B. b,d

C. a,b

D. c,d

Answer: B

Watch Video Solution

28. The oxidation state of nitrogen is correctly given for

Compound	Oxidation state
A) $\left[Co(NH_3)_5Cl\right]Cl_2$	0
B) NH_2OH	–2
C) $(N_2H_5)_2SO_4$	+2
D) Mg_3N_2	–3

Watch Video Solution

29. In the reaction,

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

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

Answer: D

Watch Video Solution

30. Which of the following is not a disproportionation reaction? .

I) $NH_4NO_3 \xrightarrow{\Delta} N_2O + H_2O$

II) $P_4 \xrightarrow{\Delta} PH_3 + HPO_2^{\ominus}$

III) $PCl_5 \xrightarrow{\Delta} PCl_3 + Cl_2$

IV) $IO_3^{\ominus} + I^{\ominus} \longrightarrow I_2$

A. I,II

B. I, III,IV

C. II,IV

D. I,III

Answer: B

Watch Video Solution

31. When $KMnO_4$ acts as an oxidising agent and ultimately form MnO_4^{2-}, MnO_2, Mn_2O_3, and Mn^{2+}, then the numbers of electrons transferred in each case, respectively, are

A. 4,3,1,5

B. 1,5, 3, 7

C. 1,3,4, 5

D. 3,5,7,1

Answer: C

Watch Video Solution

32. The oxidation states of the most electronegative element in the products of the reaction between BaO_2 and H_2SO_4 are

A. 0 and -1

B. -1 and -2

C. -2 and 0

D. -2 and $+1$

Answer: B

Watch Video Solution

33. In the compound $YBa_2Cu_3O_7$ which shows super conductivity, what is the oxidation state of Cu? Assume that the rare earth element yttrium is in its usual +3 oxidation state.

A. $+\frac{7}{3}$

B. $-\frac{7}{3}$

C. $\frac{5}{3}$

D. $-\frac{5}{3}$

Answer: A

Watch Video Solution

34. Oxidation states of the metal in the minerals haematite and magnetite, respectively, are

A. II, III in haematite and III in magnetite

B. I, III in haematite and II in magnetite

C. II in haematite and II, III in magnetite

D. III in haematite and II, III in magnetite

Answer: D

Watch Video Solution

35. Which of the following molecules can acts as oxidising as well as reducing agent?

A. 1,2,3

B. 2,3,4

C. 1,3,4

D. All

Answer: C

Watch Video Solution

36. In balancing the half reaction, $CN^{\Theta} \rightarrow CNO^{\Theta}$ (skeletal)

The number of electrons that must be added is

A. I on the right

B. 0

C. 1 on the left

D. 2 on the right

Answer: D

Watch Video Solution

37. In which of the following pairs of compounds, nitrogen has maximum positive and maximum negative values of oxidation number?

A. NH_3 and HN_3

B. HNO_3 and HCN

C. N_2O and NH_2OH

D. N_2O_4 and NO_2

Answer: B

Watch Video Solution

38. In the reaction $C_2H_5OH + xI_2 + 6OH^- \rightarrow CHI_3 + HCO_2^- + yI^- + 5H_2O$ the value of x and y, respectively, are

A. 2,1

B. 3,3

C. 4,5

D. 5,7

Answer: C

Watch Video Solution

39. The stoichiometric numbers appearing from left to right in the reaction

$MnO_4^{2-} + H^+ \rightarrow MnO_4^- + MnO_2 + H_2O$ are

A. 3, 2, 2, 1,2

B. 3,4, 2, 1,2

C. 2, 4, 1, 2,2

D. 2,3,1, 1, 2

Answer: B

Watch Video Solution

40. Oxidation number of oxygen in potassium superoxide is

A. -0.5

B. 1

C. -1.5

D. 2

Answer: A

Watch Video Solution

41. Given are the nickel compounds $Ni(CO_4), K_2[NiF_6)$ and $K_2\left[Ni(CN)_4\right]$. The order of compounds having increasing oxidation number of nickel is : $Ni(CO)_4 < K_2[NiF_6] < K_2\left[Ni(CN)_4\right]$,

$Ni(CO)_4 < K_2\left[Ni(CN)_4\right] < K_2[NiF_6]$,

$K_2\left[Ni(CN)_6\right] < K_2[NiF_6] < Ni(CO)_4$,

$K_2\left[Ni(CN)_6\right] < Ni(CO)_4 < K_2[NiF_6]$

A. $Ni(CO)_2 < K_2[NiF_6] < K_2\left[Ni(CN)_4\right]$

B. $Ni(CO_4) < K_2\left[Ni(CN)_4\right] < K_2[NiF_6]$

C. $K_2\left[Ni(CN)_6\right] < K_2[NiF_6] < Ni(CO)_4$

D. $K_2\left[Ni(CN)_6\right] < (CO_4) < K_2[NiF_6]$

Answer: B

Watch Video Solution

42. Which one of the following equations represents a redox reaction?

A. $PCl_3 + 3H_2O \rightarrow H_3PO_3 + 2HCl$

B. $2NF_2 + H + 2KF \rightarrow KHF_2 < K_2[NiF_6]$

C. $K_2\left[Ni(CN)_6\right] < K_2[NiF_6] < Ni(CO)_4$

D. $2KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2KNO_3$

Answer: C

Watch Video Solution

43. In the reaction $Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + NaI$(not balanced), which of the following is/are true?

I) $Na_2S_2O_3$ is a reducing agent

II) Iodine is an oxidizing agent

III) It is an example of intermolecular redox reaction

IV) In $Na_2S_4O_6$, the average oxidation state of S is (+5/2)

A. I,II,IV

B. I,II

C. I,II,III

D. I,II,III,IV

Answer: D

Watch Video Solution

44. How many electrons are involved in the following redox reaction?

$Cr_2O_7^{2-} + Fe^{2+} + C_2O_4^{2-} \rightarrow Cr^{3+} + Fe^{3+} + CO_2$ (acidic medium)

A. 3

B. 4

C. 6

D. 5

Answer: C

Watch Video Solution

45. Consider the chemical change which is occuring in basic medium :

$ClO_3^- + N_2H_4 \rightarrow NO + Cl^- + H_2O$

The correct statement is

A. N_2H_4 is acting as an oxidizing agent in the reaction

B. 3 mol of N_2H_4 are required per mole of ClO_3^-

C. The electrons transferred per mol of N_2H_4 reduce 1.33 mol of ClO_3^-

D. 5 mol of electrons are gained by per mole of ClO_3^-

Answer: C

Watch Video Solution

46. Choose the incorrect statement in the following:

A. The total electrons involved in the balanced chemical equation is 5

B. Two moles of electrons are donated by per mole of BiO_3^-

C. 2.8 mol of H^+ are required for the change one mole of BiO_3^- to Bi^{3+}

D. Acid is used as reducing agent in this reaction

Answer: C

Watch Video Solution

47. How many moles of $KMnO_4$ are required in the acidic medium for complete oxidation of 15 mol of $FeSO_4$?

A. 2

B. 3

C. 4

D. 5

Answer: B

Watch Video Solution

48. When copper is treated with a certain concentration of nitric acid, nitric oxide and nitrogen dioxide is liberated in equal volumes according to the equation, $xCu + yHNO_3 \rightarrow Cu(NO_3)_2 + NO + NO_2 + H_2O$. The coefficient of 'x' and 'y' are

A. 2 and 3.

B. 2 and 6

C. 1 and 3

D. 3 and 8

Answer: B

Watch Video Solution

49. If 2.68×10^{-3}mol of a solution containing an ion A^{n+} requires 1.6×10^{-3} mol of MnO_4^- for the oxidation of A^{n+} to AO_3^- in acid medium, what is the value of n?

A. 3

B. 5

C. 2

D. 4

Answer: C

Watch Video Solution

50. Consider the reaction:

$H_2SO_3(aq) + Sn^{4+}(aq) + H_2O(l) \rightarrow Sn^{2+}(aq) + HSO_4^-(aq) + 3H^+(aq$

Which of the following statements is correct?

A. Sn^{4+} is the oxidizing agent because it undergoes oxidation

B. Sn^{4+} is the reducing agent because it undergoes oxidation

C. H_2SO_3 is reducing agent because it undergoes oxidation

D. H_2SO_3 is the oxidising agent because it undergoes reduction

Answer: C

Watch Video Solution

Level Iii

1. $C_2O_4^{2-} + MnO_4^- \xrightarrow{H^+} Mn^{2+} + CO_2$

The number of H^+ ions in the balanced equation of the above redox reaction is

A. $C_2Cr_2O_4^{2-}$

B. Fe^{2+}

C. SO_4^{2-}

D. S^{2-}

Answer: C

Watch Video Solution

2. $aK_2Cr_2O_7 + bKCl + cH_2SO_4 \rightarrow xCrO_2Cl_2 + yKHSO_4 + zH_2O.$

The above equation balances when :

A. a=2, b=4, c=6 and x=2, y=6, z=3

B. a=4,b=2,c=6 and x = 6 y=2, z=3

C. a=6,b=4, c=2 and x=6, y=3,z=2

D. a= 1,b=4,c=6 and x=2, y=6, z= 3

Answer: D

Watch Video Solution

3. In alkaline medium ClO_2 oxidises H_2O_2 to O_2 and itself gets reduced to Cl^- . How many moles of H_2O_2 are oxidized by 1 mole of ClO_2 ?

A. 1

B. $3/2$

C. $5/2$

D. $7/2$

Answer: C

Watch Video Solution

4. Which of the following statements is wrong?

A. Acidified $KMnO_4$ solution decolourises on the addition of sodium oxalate

B. In the reaction between Br_2 and Csl, Br_2 is an oxidising agent and CSI is a reducing agent

C. In the reaction $2K_2S_2O_3I_2 \rightarrow 2KI + K_2S_4O_6$, the change in the oxidation number of S is 0.5.

D. C has the same oxidation number in both CH_4 and CO_2.

Answer: D

Watch Video Solution

5. A sample of a chromium-containing alloy weighing 3.45 g was dissolved in acid, and all the chromium in the sample was oxidized to CrO_4^{2-} was then found that 3.0 g of Na_2SO_3 was required to reduce the CrO_2^- to CrO_4^{2-} in a basic solution, with SO_3^{2-}. getting oxidized to SO_4^{2-}. Then which of the following statement is incorrect?

A. The percentage of chromium in alloy is 23.9%

B. Oxidation state of chromium changes from +6 to +4

C. 1.5 moles of SO_3^{2-} are consumed per mole of CrO_4^{2-}

D. One mole of base is involved to convert per mole of CrO_4^{2-} in this redox reaction.

Answer: B

Watch Video Solution

6. Metallic tin in the presence of HCl is oxidized by $K_2Cr_2O_7$ to stannic chloride. What volume of decinormal dichromate solution will be reduced by I goftin? (Atomic weight of Sn=118.7u)

A. 336.9 mL

B. 235.6 mL

C. 465.23 mL

D. 398.56 mL

Answer: A

Watch Video Solution

7. A polyvalent metal weighing 0.1 g and having atomic weight of 51g reacted with dilute H_2SO_4, to give 43.9 mL of hydrogen at STP The solution containing the metal in this lower oxidation state, was found to require 58.8 mL of 0.1 N $KMnO_4$ solution for complete oxidation. What are oxidation state of metal?

A. 3 and 5

B. 3 and 3

C. 5 and 6

D. 2 and 5

Answer: D

Watch Video Solution

8. A 15.00 mL sample of a solution containing oxalic acid, $H_2C_2O_4$ was titrated with 0.02 M $KMnO_4$. The titration, required 18.30 mL of the

$KMnO_4$ solution. What was the molarity of the $H_2C_2O_4$ solution? In the reaction, oxalate ion $\left(C_2O_4^{2-}\right)$ is oxidized to CO_2 and MnO_4^- is reduced to Mn^{2+}.

A. 0.082

B. 0.061

C. 0.061

D. 0.82

Answer: B

Watch Video Solution

9. Which of the following reactions should be balanced in basic medium?

A. $NH_3 + MnO_4^- \rightarrow MnO_2 + NO_2$

B. $Cr(OH)_2 + I_2 \rightarrow Cr(OH)_3 + 2I^-$

C. $HNO_3 + Fe^{2+} \rightarrow Fe^{3+} + NO_2$

D. $H_2O_2 + Fe^{3+} \rightarrow O_2 + Fe^{2+}$

Answer: A::B

Watch Video Solution

10. For the reaction: $I^- + ClO_3^- + H_2SO_4 \rightarrow Cl^- + HSO_4^- + I_2$ The correct statements in the balanced equation are:

A. stoichiometric coefficient of HSO_4^- is 6

B. iodine is oxidised

C. sulphur is reduced

D. H_2O is one of the products

Answer: A::B::D

Watch Video Solution

11. Which of the following are redox reactions?

A. $\frac{1}{2}H_2 + \frac{1}{2}I_2 \rightarrow HI$

B. $PCl_5 \rightarrow PCl_3 + Cl_2$

C. $2CuSO_4 + 4KI \rightarrow Cu_2I_2 + 2K_2SO_4 + I_2$

D. $CaOCl_2 \rightarrow Ca^{2+} + Ocl^- + Cl^-$

Answer: A::B::C

Watch Video Solution

12. $H_2C_2O_4$ and $NaHC_2O_4$ behave as.acids as well as reducing agents. Which are correct statements?

A. Equivalent weight of H_2C_2O4 and $NaHC_2O_4$ are equal to their moleculear weights when acting as reducing agents.

B. Equivalent weight of $H_2C_2O_4$ and $NaHC_2O_4$ are equal to half their molecular weights when acting as reducing agents ,

C. 100 mL of 1 M solution of each is neutralized by equal volumes of $1N Ba(OH)_2$

D. 100 mL of 1 M solution of each is oxidized by equal volumes of $1M KMnO_4$

Answer: B::D

Watch Video Solution

13. Which of the following statements are correct?

A. All reactions are oxidation and reduction reactions

B. Oxidizing agent is itself reduced

C. Oxidation and reduction always go side by side

D. Oxidation number during reduction decreases

Answer: B::C::D

Watch Video Solution

14. When the following half-reaction is balanced: $CN^- \rightarrow CNO^-$ Which of the following statement is (are) true regarding the balanced half-reaction?

A. Carbon is losing two electrons per atom

B. Oxidation number of carbon increases from +1 to +3

C. Oxidation number of nitrogen remains constant

D. Oxidation number of nitrogen is decreases from +3 to-3

Answer: A::C

Watch Video Solution

15. When the following redox reaction is balanced in basic medium, $MnO_4^- + C_2O_4^{2-} \rightarrow MnO_2 + CO_3^{2-}$ Which of the following statements applies appropriately to the balanced reaction?

A. 1.50 moles of oxalate would be oxidized per mol of permanganate

B. Oxidation number of carbon is changing from 2 to+4

C. The equivalent weight of $KMnO_4$ in the above redox reaction is one-third of its molar mass

D. In the balanced reaction, $4OH^-$ appears on the reactants side

Answer: A::C::D

Watch Video Solution

16. Consider the following redox reaction: $KMnO_4 + Na_2S_2O_3 + H^+ \rightarrow Mn^+ + SO_4^{2+} + SO_4^{2-} + K^+$ Which of the following is (are) true regarding the above redox reaction?

A. $\frac{5}{8}$ mol of $Na_2S_2O_3$ is oxidized by one mole of $KMnO_4$

B. Oxidation number of sulphur changes from +4 to +12

C. Change of medium from acidic to basic will have no effect on the stoichiometry of reaction

D. Change the medium from acidic to basic will change the nature of product

Answer: A::D

View Text Solution

17. Which of the following can be oxidized further with a strong oxidising agent? S O 2 M n O 2 A l 2 O 3 C r O 3

A. SO_2

B. MnO_2

C. Al_2O_3

D. CrO_3

Answer: A::B

Watch Video Solution

18. Consider the following reaction: $CuSO_4 + KI + H^+ Cs + I_2 + K_2SO_4$ Which of the following can be predicted appropriately?

A. The given reaction is a redox reaction

B. The given reaction is a precipitation reaction

C. One mole of $CuSO_4$ consumes two moles of KI

D. Iodide is being disproportionated in the above reaction.

Answer: A::B::C

View Text Solution

19. Which of the following are disproportionation reaction:

A. $F_2 + H_2O \rightarrow HOF + HF$

B. $2HCHO + NaOh \rightarrow HCOONa + CH_3OH$

C. $P_{4(s)} + 3NaOH + 3H_2O \rightarrow PH_3 + 3NaH_2PO_2$

D. $2NO_2 + 2KOH \rightarrow KNO_2 + KNO_3 + H_2O$

Answer: B::C::D

Watch Video Solution

20. For the reaction $I^- + ClO_3^- + H_2SO_4 \rightarrow Cl^- + HSO_4^- + I_2$

The correct statement(s) in the balanced equation is/are:

A. Stoichiometric coefficient of HSO_4^- is 6

B. lodide is oxidized

C. Sulphur is reduced

D. H_2O is one of the products

Answer: A::B::D

Watch Video Solution

21. If 2.68×10^{-3}mol of a solution containing an ion A^{n+} requires 1.6×10^{-3} mol of MnO_4^- for the oxidation of A^{n+} to AO_3^- in acid medium, what is the value of n?

Watch Video Solution

22. The brown ring complex compound is formulated as $\left[Fe(H_2O)_5NO\right]SO_4$ The oxidation state of Fe is

Watch Video Solution

23. In the following reaction: $XZn + yHNO_3(dil) \rightarrow aZn(NO_3)_2 + bH_2O + cNH_4NO_3$ What is the sum of the coefficients (a+b+c)?

Watch Video Solution

24. The difference in the oxidation numbers of two types of sulphur atoms in $Na_2S_4O_6$ is.....

Watch Video Solution

25. The number of moles of $KmnO_4$ reduced by 1 mol of Kl in alkaline medium is

Watch Video Solution

26. In the following reaction,

$M^{x+} + MnO_4^- \rightarrow MO_3^- + Mn^{2+} + \frac{1}{2}O_2$ If one mole of MnO_4^- oxides 2.5 moles of M^{x+} then the value of x is

Watch Video Solution

27. The number of electrons lost in the following change is:

$Fe + H_2O \rightarrow Fe_3O_4 + H_2$

A. 2

B. 4

C. 6

D. 8

Answer: 8

Watch Video Solution

28. Match the reactions in column I with their respective characteristics in column II.

Column-I Name and reaction		Column-II Characteristics	
A)	$P \rightarrow PH_3 + H_2PO_2^-$	p)	Fractional oxidation number
B)	C_3O_2	q)	Redox reaction
C)	CH_2Cl_2	r)	Natural redox reaction
D)	$MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$	s)	Zero oxidation number
E)	Photosynthesis	t)	Disproportionation
		u)	Auto-redox reaction

Watch Video Solution

29. Match the reactions in column I with the nature of the reactions/type of the products listed in column II.

	Column-I		Column-II
A)	$O_2^- \rightarrow O_2 + O_2^{2-}$	p)	Redox reaction
B)	$CrO_4^{2-} + H^{\oplus} \rightarrow$	q)	One of the products has trigonal planar structure
C)	$MnO_4^- + NO_2^- + H^+ \rightarrow$	r)	Dimeric bridged tetrahedral metal ion
D)	$NO_3^- + H_2SO_4 + Fe^{2+} \rightarrow$	s)	Disproportionation

Watch Video Solution

30. Match the compound with the average oxidation state of Fe.

	Column I.		Column II
A)	$Fe_4[Fe(CN)_6]_3$	p)	+12/5
B)	$[Fe(NO)(H_2O)_5]SO_4$	q)	+2
C)	$Fe_3[Fe(CN)_6]_2$	r)	+18/7
D)	$Na_2[Fe(CN)_5NO]$	s)	+1

Watch Video Solution

31. Match the reaction with its type.

Column I		Column II	
A)	$V_2O_5 + Ca \rightarrow 2V + 5CaO$	p)	Non-metal displacement reaction
B)	$2NaH \rightarrow 2Na + H_2$	q)	Disproportionation reaction
C)	$P_4 + 3OH^- + 3H_2O \rightarrow PH_3 + 3H_2PO_2$	r)	Decomposition reaction
D)	$Ca + 2H_2O \rightarrow Ca(OH)_2 + H_2$	s)	Redox reaction

Watch Video Solution

32. Match the reactions given in column I with their respective oxidant/reductant given in column II.

Column I		Column II	
	Reaction and substance acting as oxidant or reductant		Oxidant and reductant
A)	$3I_2 + 6NaOH \rightarrow NaIO_3 + 5NaI + 3H_2O$ (I_2 acts as)	p)	None act as oxidant or reductant
B)	$BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + 2NaCl$ $BaCl_2$ acts as	q)	Reductant
C)	$AlCl_3 + 3Na \rightarrow 3NaCl + Al$ $AlCl_3$ act as	r)	Both act as oxidant and reductant
D)	$SO_2 + H_2S \rightarrow 3S + H_2O$ H_2S acts as	s)	Oxidant

Watch Video Solution

33. Assertion : Conversion of potassium ferrocyanide to potassium ferricyanide is an oxidation process.

Reason : Oxidation is the addition of an electronegative element to a substance or removal of an electropositive element from a substance. : If both (A) and (R) are correct and (R) is the correct explanation of (A)., If both (A) and (R) are correct, but (R) is not the correct explanation of (A)., If (A) is correct, but (R) is incorrect., If both (A) and (R) are incorrect.

A. Statement 1 is 'True, statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: A

Watch Video Solution

34. Assertion : In the reaction between potassium permanganate and potassium iodide, permanganate ions act as oxidising agent .

Reason : Oxidation state of manganese changes from +2 to +7 during the reaction.

A. Statement 1 is 'True, statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: C

 Watch Video Solution

35. Assertion : Displacement reactions of chlorine, bromine and iodine using fluorine are not generally carried out in aqueous solution.

Reason : Fluorine being highly reactive attacks water and displaces the oxygen of water. : If both (A) and (R) are correct and (R) is the correct explanation of (A)., If both (A) and (R) are correct, but (R) is not the correct explanation of (A),. If (A) is correct, but (R) is incorrect., If both (A) and (R) are incorrect.

A. Statement 1 is 'True, statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: A

Watch Video Solution

36. Statement 1 : In CIF_3, chlorine has the oxidation number-1. Statement 2 : Electron affinity of chlorine is greater than that of fluorine

A. Statement 1 is 'True, statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: D

Watch Video Solution

37. Assertion : The two Fe atoms in Fe_3O_4, have different oxidation numbers.

Reason : Fe^{2+} ions decolourise $KMnO_4$ solution.

A. Statement 1 is 'True, statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: B

Watch Video Solution

38. The salt of an alkali metal gives violet colour in the flame test. Its aqueous solution gives a white precipitate with barium chloride in hydrochloric acid medium. The salt is

A. Statement 1 is 'True, statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: D

Watch Video Solution

39. Which of the following oxides of carbon has fractional oxidation state?

A. Carbon monoxide

B. Carbon dioxide

C. Carbon suboxide

D. All of these

Answer: C

Watch Video Solution

40. Which of the following compounds of carbon has highest oxidation state?

A. CH_4

B. CH_3OH

C. CH_2O

D. $HCOOH$

Answer: D

Watch Video Solution

41. Oxidation state of carbon in diamond is:

A. zero

B. $+1$

C. -1

D. $+2$

Answer: A

Watch Video Solution

42. Oxidation reaction involves loss of electrons, and reduction reaction involves gain of electrons. The reaction in which a species disproportionates into two oxidation states (lower and higher) is called disproportionation reaction.

Which of the following statements is wrong?

A. An acidified $K_2Cr_2O_7$ paper on being exposed to SO_2 turns green.

B. Mercuric chloride and stannoúschloride cannot exist as such.

C. Iron turning on addition to $CuSO_4$ solution decolourises the blue colour.

D. $[CuI_4]^{2-}$ is formed but $[CuCl_4]^{2-}$ is not.

Answer: D

Watch Video Solution

43. Oxidation reaction involves loss of electrons, and reduction reaction involves gain of electrons. The reaction in which a species disproportionates into two oxidation states (lower and higher) is called disproportionation reaction.

Which of the following statements is correct?

A. An element in the lowest oxidation state acts only as a reducing agent.

B. An element in the highest oxidation state acts only as a reducing agent

C. The oxidation number of V in $Rb_4K(HV_{10}O_{28})$ is +4.

D. The oxidation number and valency of Hg in calomel is +1.

Answer: A

Watch Video Solution

44.

Which of the following statements is wrong?

A. The algebraic sum of the oxidation numbers of all atoms in an ion is zero

B. The oxidation number is an arbitrary number. It can have positive, negative, zero, or fractional values.

C. When a negative ion changes to neutral species, the process is oxidation

D. The oxidation number of phosphorous can vary from–3 to +5.

Answer: A

Watch Video Solution

45. Which one of the compound cannot decolourize an acidified solution of $KMnO_4$?

A. SO_2

B. $FeCl_3$

C. H_2O_2

D. $FeSO_4$

Answer: B

Watch Video Solution

46.

When SO_2 is passed in a solution of potassiuin iodate, the oxidation state of iodine changes from+ 5 to 0 + 5 to -1 – 5 to 0 – 7 to -1

A. $+5$to 0

B. $+5$ to -1

C. -5 to 0

D. -7 to -1

Answer: A

Watch Video Solution

47. .

In the reaction:

$As_2S_3 + HNO_3 \rightarrow H_3AO_4 + H_2SO_4 + NO$ the element oxidised is :As only S only N only As and s both

A. As only

B. S only

C. N only

D. As and s both

Answer: D

Watch Video Solution

48. Select the species which can act as oxidant and reductant both:

$(I)H_2SO_3, (II)H_2O_2, (III)O_3 (IV)HNO_3, (V)Cl_2$

A. I,II,III

B. I,II,III,V

C. II,III,IV,V

D. III,IV,V

Answer: B

Watch Video Solution

49. Oxidation number of oxygen in K_2O, K_2O_2, KO_2, KO_3 increases in the order:

A. $KO_3 < KO_2 < K_2O_2 < K_2O$

B. $KO_2 < KO_3 < K_2O < K_2O_2$

C. $K_2O < K_2O_2 < KO_2 < KO_3$

D. $KO_3 < K_2O < KO_2 < K_2O_2$

Answer: C

Watch Video Solution

50. Oxidation is de-electronation whereas reduction is electronation and both occur simultaneously. The overall chemical change is called redox reaction. Redox reactions are of three types: (i) Intermolecular redox reactions, (ii) Autoredox or disproportionation reaction, and (iii) Intramolecular redox reactions. Oxidants are themselves reduced and oxidise reductants. The oxidation number of an element in acompound decides its nature to act as oxidant or reductant.

Which of the following show intramolecular redox change:

$(I) 2KClO_3 \rightarrow 2KCl + 3O_2$

$(II) (NH_4)_2Cr_2O_7 \rightarrow N_2 + Cr_2O_3 + 4H_2O$

$(III) NH_4NO_2 \rightarrow N_2 + 2HO_2O$

$(IV) 2Cu^{2+} \rightarrow Cu^{2+} + Cu$

A. II,III

B. I,IV

C. I,II,III

D. II,IV

Answer: C

Watch Video Solution