**Time :** 07:02:00 **CHEMISTRY**

**Marks :** 1688

8.REDOX REACTIONS

**Single Correct Answer Type**

1. Which among the following shows maximum oxidation state?

 a) $V$ b) $Fe$ c) $Mn$ d) $Cr$

2. A substance, that by its sharp colour change indicates the completion of reaction is known as :

 a) Acid b) Base c) Indicator d) None of these

3. In the reaction, $CH\_{3}OH ⟶HCOOH$, the number of electrons that must be added to the right is:

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

4. A solution of $KMnO\_{4}$ is reduced to $MnO\_{2}.$ The normality of solution is 0.6. The molarity is:

 a) 1.8 $M$ b) 0.6 $M$ c) 0.1 $M$ d) 0.2 $M$

5. In the reaction of $O\_{3}$ and $H\_{2}O\_{2},$ the later acts as :

 a) Oxidising agent

 b) Reducing agent

 c) Bleaching agent

 d) Both oxidising and bleaching agent

6. Of the following reactions, only one is a redox reaction. Identify this reaction.

 a) $Ca\left(OH\right)\_{2}+2HCl⟶CaCl\_{2}+2H\_{2}O$ b) $2S\_{2}O\_{7}^{2-}+2H\_{2}O⟶2SO\_{4}^{2-}+4H^{+}$

 c) $BaCl\_{2}+MgSO\_{4}⟶BaSO\_{4}+MgCl\_{2}$ d) $Cu\_{2}S+2FeO⟶2Cu+2Fe+SO\_{2}$

7. Reductants are substances which :

 a) Show an increase in their oxidation number during a change

 b) Lose electrons during a change

 c) Reduce others and oxidise themselves

 d) All of the above

8. In the equation, $SnCl\_{2}+ 2HgCl\_{2} ⟶Hg\_{2}Cl\_{2}+SnCl\_{4}. $The equivalent weight of stannous chloride (molecular weight = 190) will be :

 a) 190 b) 95 c) 47.5 d) 154.5

9. The oxoacid which acts both as oxidising and reducing agent is :

 a) $H\_{2}SO\_{4}$ b) $H\_{3}PO\_{4}$ c) $HNO\_{2}$ d) $HClO\_{4}$

10. Oxidation state of oxygen is −1 in the compound :

 a) $NO\_{2}$ b) $MnO\_{2}$ c) $PbO\_{2}$ d) $Na\_{2}O\_{2}$

11. When sulphur dioxide is passed in an acidified $K\_{2}Cr\_{2}O\_{7}$ solution, the oxidation state of sulphur is changed from

 a) 4 to 0 b) 4 to 2 c) 4 to 6 d) 6 to 4

12. Reduction is a process which involves :

 a) Electronation

 b) Addition of hydrogen or removal of oxygen

 c) Addition of metal or removal of non-metal

 d) All of the above

13. The number of electrons lost or gained during the change $Fe+H\_{2}O \rightarrow Fe\_{3}O\_{4}+H\_{2}$ is

 a) 2 b) 4 c) 6 d) 8

14. A group of methods of quantitative chemical analysis involving the measurement of volume of reacting substance is known as :

 a) Gravimetric analysis b) Volumetric analysis c) Both (a) and (b) d) None of the above

15. Which one of the following reaction is possible at anode?

 a) $F\_{2}+2e^{-}⟶2F^{-}$ b) $2H^{+}+\frac{1}{2}O\_{2}+2e^{-}⟶H\_{2}O$

 c) $2Cr^{3+}+7H\_{2}O⟶Cr\_{2}O\_{7}^{2-}+14H^{+}+6e^{-} $ d) $Fe^{2+} ⟶Fe^{3+ }+e^{-}$

16. The anion nitrate is converted into ammonium ion. The equivalent mass of nitrate ion in the reaction would be:

 a) 6.20 b) 7.75 c) 10.5 d) 21.0

17. WI ich acts as a reducing agent?

 a) $HNO\_{3}$ b) $KMnO\_{4}$ c) $H\_{2}SO\_{4}$ d) $\left(COOH\right)\_{2}$

18. What weight of $HNO\_{3}$ is needed to convert 5 g$ I\_{2}$ into $HIO\_{3}, HNO\_{3} ⟶NO?$

 a) 4.13 g b) 24.8 g c) 6.2 g d) 10.2 g

19. When $SO\_{2}$ is passed in acidified potassium dichromate solution, the oxidation state of S is changed from :

 a) + 4 to 0 b) +4 to +2 c) +4 to +6 d) +6 to +4

20. Among the properties given below, the set of properties shown by $CN^{-}$ ion towards metal species is :

1. Reducing; 2. Oxidising ; 3. Complexation

 a) 1, 3 b) 1, 2, 3 c) 1, 2 d) 2, 3

21. Solution of sodium metal in liquid $NH\_{3}$ is strongly reducing due to the presence of :

 a) Sodium atoms b) Solvated electrons c) $NaOH$ d) Sodium amide

22. Oxidation numbers of Fe in $Fe\_{3}O\_{4}$ are :

 a) +2 and +3 b) +1 and +2 c) +1 and +3 d) None of these

23. It is found that V forms a double salt isomorphous with Mohr’s salt. The oxidation number of V in this compound is :

 a) + 3 b) + 2 c) + 4 d) −4

24. $MnO\_{4}^{-}$ is a good oxidising agent in different medium changing to

$$MnO\_{4}^{-} ⟶Mn^{2+}$$

 $⟶ MnO\_{4}^{2-}$

 $⟶ MnO\_{2}$

 $ ⟶Mn\_{2}O\_{3}$

 Changes in oxidation number respectively are

 a) 1,3,4,5 b) 5,4,3,2 c) 5,1,3,4 d) 2,6,4,3

25. The oxidation number of Ba in barium peroxide is :

 a) +2 b) −1 c) +4 d) +6

26. Strongest reducing agent among the following is :

 a) $K$ b) $Mg$ c) $Al$ d) $Ba$

27. The eq. wt. of $Na\_{2}S\_{2}O\_{3}$ as reductant, in the reaction, $Na\_{2}S\_{2}O\_{3}+5H\_{2}O+4Cl\_{2} ⟶2NaHSO\_{4}+8HCl :$

 a) $(Mol.wt.)/1$ b) (Mol. wt.)/2 c) (Mol. wt.)/6 d) (Mol. wt.)/8

28. When Fe metal is rusted then Fe is :

 a) Oxidised b) Reduced c) Hydrolysed d) Precipitated

29. The value of $n$ in $MnO\_{4}^{-}+8H^{+}+ne^{-}\rightarrow Mn^{2+}+4H\_{2}O$ is

 a) 5 b) 4 c) 2 d) 3

30. In nitric oxide (NO), the oxidation state of nitrogen is :

 a) −2 b) +1 c) −1 d) +2

31. Reaction of acidified $KMnO\_{4}$ with ferrous oxalate gives oxidation products containing :

 a) $Fe^{3+}$ b) $CO\_{2}$ c) Both (a) and (b) d) None of these

32. How many litre a 0.5 $N$ solution of an oxidising agent are reduced by 2 litre of 2.0 $N$ solution of a reducing agent?

 a) 8 litre b) 4 litre c) 6 litre d) 7 litre

33. In which of the following oxygen shows$ -$1 oxidation state?

 a) $H\_{2}O\_{2}$ b) $CO\_{2}$ c) $H\_{2}O$ d) $OF\_{2}$

34. The coefficients of $ I^{-}, IO\_{3}^{-} and H^{+}$ in the redox reaction, $I^{-}+ IO\_{3}^{-}+H^{+}\rightarrow I\_{2}+H\_{2}O$ in the balanced form respectively are

 a) 5, 1, 6 b) 1, 5, 6 c) 6, 1, 5 d) 5, 6, 1

35. Which compound shows highest oxidation number for chlorine?

 a) $HCl$ b) $KClO$ c) $KClO\_{3}$ d)

36. The number of $Fe^{2+}$ ion oxidised by one mole of $MnO\_{4}^{-}$ ions is :

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

37. The oxidation number and covalency of sulphur in the sulphur molecule $(S\_{8})$ are respectively :

 a) 0 and 2 b) + 6 and 8 c) 0 and 8 d) +6 and 2

38. The equivalent weight of iron in $Fe\_{2}O\_{3}$ would be :

 a) 18.6 b) 28 c) 56 d) 11

39. Oxidation number of carbon in carbon suboxide is :

 a) $+\frac{2}{3}$ b) $+\frac{4}{3}$ c) +4 d) $-\frac{4}{3}$

40. Volumetric estimation of $CuSO\_{4}$ using hypo as intermediate solution along with KI solution and starch as indicator is an example of :

 a) Redox titration b) Acid-base titration c) Precipitation titration d) None of these

41. Oxidation state of oxygen in $H\_{2}O\_{2}$ is

 a) $-1$ b) +2 c) $+\frac{1}{2}$ d) $-2$

42. Which reaction indicates the oxidising behavior of $H\_{2}SO\_{4}$?

 a) $2PCl\_{5}+H\_{2}SO\_{4} ⟶2POCl\_{3}+2HCl+SO\_{2}Cl\_{2}$

 b) $2NaOH+H\_{2}SO\_{4} ⟶Na\_{2}SO\_{4}+2H\_{2}O$

 c) $NaCl+H\_{2}SO\_{4} ⟶NaHSO\_{4}+HCl$

 d) $2HI+H\_{2}SO\_{4} ⟶I\_{2}+SO\_{2}+2H\_{2}O$

43. $HCO\_{3}^{-}$ contains carbon in the oxidation state:

 a) +5 b) +1 c) +4 d) zero

44. Oxidation state of oxygen atom in potassium superoxide $(KO\_{2})$ is :

 a) −1/2 b) Zero c) +1/2 d) −2

45. Which of the following reaction involves oxidation and reduction?

 a) $NaBr+HCl⟶NaCl+HBr $ b) HBr +Ag$NO\_{3}⟶AgBr+HNO\_{3}$

 c) $H\_{2}+Br\_{2}⟶2HBr$ d) $Na\_{2}O+H\_{2}SO\_{4}⟶Na\_{2}SO\_{4}+H\_{2}O$

46. The number of mole of oxalate ions oxidized by one mole of $MnO\_{4}^{-}$ ion is:

 a) 1/5 b) 2/5 c) 5/2 d) 5

47. The number of mole of $KMnO\_{4}$ that will be needed to react completely with one mole of ferrous oxalate in acidic solution is :

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

48. Equivalent mass of $IO\_{4}^{-}$ when it is converted to $I\_{2}$ in acid medium :

 a) $M/6$ b) $M/7$ c) $M/5$ d) $M/4$

49. The eq. wt. of $Fe\_{3}O\_{4}$ in , $Fe\_{3}O\_{4} + KMnO\_{4} ⟶ Fe\_{2}O\_{3} + MnO\_{2}$ is:

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

50. What volume of 3 molar $HNO\_{3}$ is needed to oxidise 8 g of $Fe^{2+} $to $Fe^{3+}$? $HNO\_{3}$, gets converted to NO :

 a) 8 mL b) 16 mL c) 32 mL d) 64 mL

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

 a) $HNO\_{3}, NO, NH\_{4}Cl, N\_{2}$ b) $HNO\_{3}, NO, N\_{2}, NH\_{4}Cl$ c) $HNO\_{3}, NH\_{4}Cl, NO, N\_{2}$ d) NO, $HNO\_{3}, NH\_{4}Cl, N\_{2}$

52. The oxidation states of iodine in $HIO\_{4}, H\_{3}IO\_{5}$ and $H\_{5}IO\_{6}$ are respectively

 a) +1,+3,+7 b) +7,+7,+3 c) +7,+7,+7 d) +7,+5,+3

53. In which reaction $H\_{2}O\_{2}$ acts as a reducing agent?

 a) $Ag\_{2}O+H\_{2}O\_{2} ⟶2Ag+H\_{2}O+O\_{2}$

 b) $2KI+H\_{2}O\_{2} ⟶2KOH+I\_{2}$

 c) $PbS+4H\_{2}O\_{2} ⟶PbSO\_{4}+4H\_{2}O$

 d) $H\_{2}O\_{2}+SO\_{2} ⟶H\_{2}SO\_{4}$

54. In the reaction ; $2Ag+2H\_{2}SO\_{4} ⟶Ag\_{2}SO\_{4}+2H\_{2}O+SO\_{2}, H\_{2}SO\_{4}$ act as :

 a) Oxidising agent b) Reducing agent c) Dehydrating agent d) None of these

55. Oxidants are substances which :

 a) Show a decrease in their oxidation number during a change

 b) Gain electrons during a change

 c) Oxidise others and reduce themselves

 d) All of the above

56. One gas bleaches the colour of the flowers by reduction while the other by oxidation. The gases are :

 a) $CO, Cl\_{2}$ b) $H\_{2}S, Br\_{2}$ c) $SO\_{2}, Cl\_{2}$ d) $NH\_{3}, SO\_{3}$

57. 5 g of a sample of bleaching powder is treated with excess acetic acid and KI solution. The liberated $I\_{2}$ required 50 mL of $N/10$ hypo. The percentage of available chlorine in the sample is :

 a) 3.55 b) 7.0 c) 35.5 d) 28.2% $Cl\_{2}$

58. The oxidation number of iodine in $IF\_{5}$ is :

 a) +5 b) −5 c) −1 d) +1

59. The eq. wt. of $FeC\_{2}O\_{4}$ in , $FeC\_{2}O\_{4} ⟶Fe^{3+}+2CO\_{2} is :$

 a) its mol. wt. b) mol. wt./3 c) mol. wt./4 d) None of these

60. Moles of $H\_{2}O\_{2}$ required for decolorizing 1 mole of acidified $KMnO\_{4}$ are :

 a) 1/2 b) 3/2 c) 5/2 d) 7/2

61. Oxidation number of sulphur in Caro’s acid is

 a) +6 b) +4 c) +8 d) +7

62. The equivalent weight of a reductant or an oxidant is given by :

 a) $Eq.wt. =\frac{mol.weight of reductatn or oxidant}{\begin{array}{c}no.of electrons lost or gained by\\ 1 molecule of reductant or oxidant\end{array}}$

 b) $Eq.wt. =\frac{mol.wt.}{valence}$

 c) $Eq.wt. =\frac{mol.wt.}{total charge on cation or anion}$

 d) All of the above

63. In presence of dil. $H\_{2}SO\_{4}$. The equivalent weight of $KMnO\_{4}$ is :

 a) 1/5 of its molecular weight

 b) 1/6 of its molecular weight

 c) 1/10 of its molecular weight

 d) 1/2 of its molecular weight

64. Respiration is :

 a) Oxidation b) Reduction c) Both (a) and (b) d) None of these

65. $aK\_{2}Cr\_{2}O\_{7}+bKCl+cH\_{2}SO\_{4}⟶xCrO\_{2}Cl\_{2}+yKHSO\_{4}+zH\_{2}O.$

 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 $x=2,y=6,z=3$

66. Which of the following shows highest ox, no. in combined state?

 a) $Os$ b) $Ru$ c) Both (a) and (b) d) None of these

67. The oxidation number of sulphur in $H\_{2}S\_{2}O\_{8}$ is :

 a) +2 b) +6 c) +7 d) +14

68. In the following reaction

 $M^{x+}+MnO\_{4} MO\_{3}+Mn^{2+}+\frac{1}{2}O\_{2},$

 If one mole of $MnO\_{4}$ oxidises 2.5 moles of $M^{x+}$ then the value of $x$ is

 a) 5 b) 3 c) 4 d) 2

69. What volume of $N$ $K\_{2}Cr\_{2}O\_{7}$ solution is required to oxidise (in acid solution) a solution containing 10 g of $FeSO\_{4}$? (mol.wt.of $FeSO\_{4}$ = 152)

 a) 65.78 mL b) 134 mL c) 35 mL d) 33.5 mL

70. Bleaching action of chlorine in presence of moisture is :

 a) Reduction b) Oxidation c) Hydrolysis d) substitution

71. A mixture of potassium chlorate, oxalic acid and sulphuric 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

72. Stannous chloride gives a white precipitate with a solution of mercuric chloride. In this process mercuric chloride is :

 a) Oxidized

 b) Reduced

 c) Converted into a complex compound containing $Sn$ and $Hg$

 d) Converted into a chloro complex of $Hg$

73. In the titration of $CuSO\_{4} vs.$ Hypo in presence of KI, which statement is wrong?

 a) It is iodometric titration

 b) $I\_{2}$ with starch gives blue colour

 c) $CuSO\_{4}$ is reduced to white $Cu\_{2}I\_{2}$ during redox change

 d) The solution before titration, on addition of KI appears blue

74. Manganese acts as strongest oxidising agent in the oxidation state

 a) +7 b) +2 c) +4 d) +5

75. The value of $'n'$ in the reaction

 $Cr\_{2}O\_{7}^{2-}+14H^{+}+nFe^{2+} ⟶2Cr^{3+}+nFe^{3+}+7H^{2}O$

 will be

 a) 2 b) 3 c) 6 d) 7

76. 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 $N\_{2}O$ c) 1 mole of $NO\_{2}$ d) 1 mole $NH\_{3}$

77. The oxidation number of phosphorus in $PO\_{4}^{3-}, P\_{4}O\_{10} and P\_{2}O\_{7}^{4-}$ is :

 a) +3 b) +2 c) −3 d) +5

78. In the equation ,

$$CrO\_{4}^{2 }+SO\_{3}^{2} Cr(OH)\_{4}+SO\_{4}^{2}$$

 the oxidation number of Cr changes from

 a) 6 to 4 b) 6 to 3 c) 8 to 4 d) 4 to 3

79. Oxidation numbers of P in $PO\_{4}^{3-}$ of $S $in $SO\_{4}^{2-}$ and that of $Cr$ in $Cr\_{2}O\_{7}^{2-}$ are respectively :

 a) $-3, +6 and+6$ b) +5, +6 and +6 c) +3, +6 and +5 d) +5, +3 and +6

80. In alkaline condition $KMnO\_{4}$ reacts as follows,

 $2KMnO\_{4}+2KOH ⟶2K\_{2}MnO\_{4}+H\_{2}O+O$

 Therefore, its equivalent weight will be :

 a) 31.6 b) 52.7 c) 79.0 d) 158.0

81. Oxidation number of S in $SO\_{4}^{2-}$

 a) +6 b) +3 c) +2 d) $-2$

82. Which of the following is redox reaction?

 a) $N\_{2}O\_{5}+H\_{2}O$ ⟶ $2HNO\_{3}$

 b) $AgNO\_{3}$ + KI ⟶ $AgI+KNO\_{3}$

 c) $BaO\_{2}+H\_{2}SO\_{4}$ ⟶ $BaSO\_{4}+H\_{2}O\_{2}$

 d) $SnCl\_{2}$ + $HgCl\_{2}$ ⟶ $SnCl\_{4}+Hg$

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

 a) $IF\_{3}$ b) $IF\_{5}$ c) $I\_{3}^{-}$ d) $IF\_{7}$

84. The oxidation number of Cl in $KClO\_{3}$ is :

 a) +5 b) −5 c) +3 d) −3

85. The oxidation number of oxygen in $KO\_{3},Na\_{2}O\_{2}$ is

 a) 3,2 b) 1,0 c) 0,1 d) $-$0.33,$-$1

86. In the reaction*,* $I\_{2}+2S\_{2}O\_{3}^{2-} ⟶2I^{-}+S\_{4}O\_{6}^{2-},$ Equivalent weight of iodine will be equal to:

 a) Its molecular weight

 b) 1/2 of its molecular weight

 c) 1/4 of its molecular weight

 d) Twice the molecular weight

87. The maximum oxidation number of transition metals may be:

 a) +4 b) +6 c) +8 d) +10

88. The ratio of amounts of $H\_{2}S$ needed to precipitate all the metal ions from 100 mL 1$M$ $AgNO\_{3}$ and 100 mL of 1$M CuSO\_{4}$ is :

 a) 1 : 2 b) 2 : 1 c) Zero d) infinite

89. Oxidation state of sulphur in $Na\_{2}S\_{2}O\_{3}$ and $Na\_{2}S\_{4}O\_{6}$

 a) 4 and 6 b) 3 and 5 c) 2 and 2.5 d) 6 and 6

90. Number of $K^{+}$ ions and mole of $K^{+}$ ions present in 1 litre of $\frac{N}{5} KMnO\_{4}$ acidified solution respectively are :

 a) $0.04 and 2.4 × 10^{22}$

 b) $2.4 × 10^{22}$ and 0.04

 c) $200 and 6.023 × 10^{23}$

 d) $6.023 × 10^{23}$ and 200

91. Conversion of $PbSO\_{4}$ to $PbS$ is :

 a) Reduction of S b) Oxidation of S c) Dissociation d) None of these

92. Which change requires a reducing agent?

 a) $CrO\_{4}^{2-} ⟶CrO\_{7}^{2-}$ b) $BrO\_{3}^{-} ⟶BrO^{-}$ c) $H\_{2}O\_{2} ⟶O\_{2}$ d) $Al\left(OH\right)\_{3} ⟶Al\left(OH\right)\_{4}^{-}$

93. In the reaction, $N\_{2} ⟶NH\_{3}.$ The eq.wt. of $N\_{2}$ and $NH\_{3}$ are respectively equal to :

 a) $\frac{28}{3} ,\frac{17}{3}$ b) $\frac{28}{6} ,\frac{17}{3}$ c) $\frac{28}{2} ,\frac{17}{2} $ d) $\frac{28}{5},\frac{17}{5}$

94. Which acts as reducing agent as well as oxidising agent?

 a) $O\_{3}$ b) $ClO\_{4}^{-}$ c) $F\_{2}$ d) $MnO\_{4}^{-}$

95. When $Cl\_{2}$ gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from :

 a) Zero to −1 and zero to +3

 b) Zero to +1 and zero to −3

 c) Zero to +1 and zero to −5

 d) Zero to −1 and zero to +5

96. Which of the following is not a redox reaction?

 a) $2Na+Cl\_{2}\rightarrow 2NaCl$ b) $C+O\_{2}\rightarrow CO\_{2}$

 c) $AgNO\_{3}+NaCl\rightarrow AgCl+NaNO\_{3}$d) $Zn+H\_{2}SO\_{4}\rightarrow ZnSO\_{4}+H\_{2}$

97. The difference in the oxidation numbers of the two types of sulphur atoms in $Na\_{2}S\_{4}O\_{6}$ is

 a) 4 b) 5 c) 6 d) 7

98. A compound contains atoms $X, Y, Z.$ The oxidation number of $X$ is +2, $Y$ is +5 and $Z$ is −2. The possible formula of the compound is :

 a) $XY\_{1}Z\_{2}$ b) $Y\_{2}\left(XZ\_{3}\right)\_{2}$ c) $X\_{3}\left(YZ\_{4}\right)\_{2}$ d) $X\_{3}\left(Y\_{4}Z\right)\_{2}$

99. The equivalent weight of $SnCl\_{2}$ in the reaction, $SnCl\_{2}+Cl\_{2} ⟶SnCl\_{4} $ is :

 a) 49 b) 95 c) 45 d) 59

100. What is the ox. no. of $Mn$ in $K\_{2}MnO\_{4} ?$

 a) +4 b) +6 c) +2 d) +8

101. The stable oxidation states of $Mn are :$

 a) +2, +3 b) +3, +7 c) +2, +7 d) +3, +5

102. 25 mL of 0.50 $M H\_{2}O\_{2}$ solution is added to 50 mL of 0.20 $M KMnO\_{4}$ in acidic solution. Which of the following statements is true?

 a) 0.010 mole of oxygen is liberated

 b) 0.005 mole of $KMnO\_{4}$ are left

 c) 0.030 g atom of oxygen gas is evolved

 d) 0.0025 mole $H\_{2}O\_{2}$ does not react with $KMnO\_{4}$

103. Oxidation number of carbon in $KCN$ is :

 a) +2 b) −2 c) +1 d) +3

104. The oxidation state of $Ni$ in $Ni\left(CO\right)\_{4}$ is :

 a) Zero b) +4 c) +8 d) +2

105. $M$ is the molecular weight of $KMnO\_{4}.$ The equivalent weight of $KMnO\_{4}$ when it is converted into $K\_{2}MnO\_{4}$ is :

 a) $M$ b) $M/3$ c) $M/5$ d) $M/7$

106. Oxidation number of Mn in $K\_{2}MnO\_{4}$ and $MnSO\_{4}$ are respectively:

 a) + 7 and +2 b) +6 and +2 c) +5 and +2 d) +2 and +6

107. Which is the best description of behaviour of bromine in the reaction given below?

$$ H\_{2}O+Br\_{2}⟶HBr+HOBr$$

 a) Proton accepted only b) Both oxidised and reduced

 c) Oxidised only d) Reduced only

108. The oxidation number of P in $KH\_{2}PO\_{2} $is :

 a) +1 b) +3 c) −3 d) +5

109. $LiAIH\_{4}$ is used as :

 a) Oxidising agent b) Reducing agent c) A mordant d) Water softner

110. The brown ring complex $\left[Fe\left(H\_{2}O\right)\_{5}NO^{+}\right]SO\_{4}$ has ox.no. of Fe :

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

111. The oxidation state of Fe in Fe3O4 is

 a) +3 b) 8/3 c) +6 d) +2

112. In the reactions; $As\_{2}S\_{3}+HNO\_{3} ⟶H\_{3}AsO\_{4}+H\_{2}SO\_{4}+NO$, the element oxidized is/ are :

 a) As only b) S only c) N only d) As and S both

113. The eq. wt. of $KMnO\_{4}$ in the reaction, $MnO\_{4}^{-}+Mn^{2+}+ H\_{2}O ⟶MnO\_{2}+H^{+}$ (unbalanced) is :

 a) 52.7 b) 158 c) 31.6 d) None of these

114. $NO\_{3}^{-}$ ions are converted to $NH\_{4}^{+}$ ions by a suitable reactant. The equivalent mass of $NO\_{3}^{-}$ and $NH\_{4}^{+}$ are :

 a) 7.75, 2.25 b) 7.75, 7.75 c) 2.25, 7.75 d) 2.25, 2.25

115. Oxidation number of chlorine in $HClO\_{4}$ is :

 a) +1 b) −1 c) −7 d) +7

116. Iodine has +7 oxidation state in :

 a) $HIO\_{4}$ b) $H\_{3}IO\_{5}$ c) $H\_{5}IO\_{6}$ d) $all of these$

117. The violent reaction between sodium and water is an example of :

 a) Reduction

 b) Oxidation

 c) Redox reaction

 d) neutralisation reaction

118. Oxidation number of Fe in $K\_{3}[Fe\left(CN\right)\_{6}]$ is :

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

119. One mole of acidified $K\_{2}Cr\_{2}O\_{7}$ on reaction with excess KI will liberate………mole(s) of $I\_{2}.$

 a) 6 b) 1 c) 7 d) 3

120. In the preparation of chlorine from $HCl, MnO\_{2}$ acts as :

 a) Reducing agent b) oxidising agent c) Catalytic agent d) Dehydrating agent

121. What volume of $O\_{2}$ measured at standard conditions will be formed by the action of 100 mL of 0.5 $N KMnO\_{4}$ on hydrogen peroxide in an acidic solution? The skeleton equation for the reaction is,

 $KMnO\_{4}+H\_{2}SO\_{4}+H\_{2}O\_{2} ⟶KHSO\_{4}+MnSO\_{4}+H\_{2}O+O\_{2} :$

 a) 0.12 litre b) 0.28 litre c) 0.56 litre d) 1.12 litre

122. Which quantities are conserved in all oxidation-reduction reactions?

 a) Charge only b) Mass only

 c) Both charge and mass d) Neither charge nor mass

123. Which substance serves as a reducing agent in the following reaction,

$$14H^{+} +Cr\_{2}O\_{7}^{2-}+3Ni ⟶2Cr^{3+}+7H\_{2}O+3Ni^{2+} ?$$

 a) $H\_{2}O$ b) $Ni$ c) $H^{+}$ d) $Cr\_{2}O\_{7}^{2-}$

124. Which of the following chemical reactions depicts the oxidising behaviour of $H\_{2}SO\_{4}$?

 a) $2HI+H\_{2}SO\_{4}⟶I\_{2}+SO\_{2}+2H\_{2}O$ b) $Ca\left(OH\right)\_{2}+H\_{2}SO\_{4}⟶CaSO\_{4}+2H\_{2}O$

 c) $NaCl+H\_{2}SO\_{4}⟶NaHSO\_{4}+HCl$ d) $2PCl\_{5}+H\_{2}SO\_{4}⟶2POCl\_{3}+2HCl+SO\_{2}Cl\_{2}$

125. In the aluminothermic process, aluminium acts as :

 a) An oxidising agent b) A flux c) A reducing agent d) A solder

126. In the reaction, $SO\_{2}+2H\_{2}S \rightarrow 3S+2H\_{2}O$ the substance that oxidizes is,

 a) $H\_{2}S$ b) $SO\_{2}$ c) $S$ d) $H\_{2}O$

127. The oxidation number of sulphur in $S\_{8}, S\_{2}F\_{2}, H\_{2}S $respectively are :

 a) 0, +1 and −2 b) +2, +1 and −2 c) 0, +1 and +2 d) −2, +1 and −2

128. Maximum oxidation state is present in :

 a) $CrO\_{2}Cl\_{2}$ and $MnO\_{4}^{-}$

 b) $MnO\_{2}$

 c) $\left[Fe\left(CN\right)\_{6}\right]^{3-} $and $\left[Co\left(CN\right)\_{6}\right]^{3-}$

 d) $MnO$

129. With which element oxygen shows positive oxidation state in its compounds?

 a) Na b) Cl c) N d) F

130. What is the oxidation number of chlorine in $ClO\_{3}^{-}$?

 a) +5 b) +3 c) +4 d) +2

131. $NaClO$ solution reacts with $H\_{2}SO\_{3}$ as, $NaClO+H\_{2}SO\_{3} ⟶NaCl+H\_{2}SO\_{4}$

 A solution of $NaClO$ used in the above reaction contained 15 g of $NaClO$ per litre. The normality of the solution would be :

 a) 0.40 b) 0.20 c) 0.60 d) 0.80

132. In sodium hydride, oxidation state of sodium is :

 a) Zero b) +1 c) −1 d) +2

133. The oxidation number of xenon in $XeOF\_{2}$ is

 a) Zero b) 2 c) 4 d) 3

134. Which is not a redox reaction?

 a) $H\_{2}+Br\_{2} ⟶2HBr$

 b) $NH\_{4}Cl ⟶NH\_{3}+HCl$

 c) $NH\_{4}NO\_{3} ⟶N\_{2}O+2H\_{2}O$

 d) $Fe+S ⟶FeS$

135. In $C+H\_{2}O ⟶CO+H\_{2} ;H\_{2}O acts as : $

 a) Oxidant b) Reductant c) Both (a) and (b) d) None of these

136. Millimole of a solute in a solution can be given by :

 a) $M × V\_{in litre} $ b) $M × V\_{in mL} $ c) $\frac{wt.}{mol.wt.} × 1000$ d) Both (b) and (c)

137. The oxidation number of carbon in $H\_{2}C\_{2}O\_{4}$ is :

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

138. What is the oxidation state of P in $Ba\left(H\_{2}PO\_{2}\right)\_{2}?$

 a) +1 b) +2 c) +3 d) $-1$

139. Oxidation state of +1 for phosphorus is found in :

 a) $H\_{3}PO\_{3}$ b) $H\_{3}PO\_{4}$ c) $H\_{3}PO\_{2}$ d) $H\_{4}P\_{2}O\_{7}$

140. Oxidation number of S in $\left(CH\_{3}\right)\_{2}SO$ is :

 a) Zero b) +1 c) +2 d) +3

141. In which reaction the underlined substance has been reduced?

 a) Carbon monoxide + copper oxide ⟶ carbon dioxide + copper

 b) Copper oxide + hydrochloric acid ⟶ water + copper chloride

 c) Steam + iron ⟶ hydrogen + iron oxide

 d) Hydrogen + iron oxide ⟶ water + iron

142. The decomposition of $KCIO\_{3}$ to $KCl$ and $O\_{2} $on heating is an example of :

 a) Intermolecular redox change

 b) Intramolecular redox change

 c) Disproportionation or auto redox change

 d) None of the above

143. Mohr’s salt is oxidised to ……. in presence of acidized $KMnO\_{4}$.

 a) $Fe^{2+}$ b) $Fe^{3+}$ c) Fe d) None of these

144. Fluorine is a strong oxidising agent because :

 a) It has several isotopes

 b) It is very small and has 7 electrons in valency shell

 c) Its valency is one

 d) It is the first member of the halogen series

145. In the conversion of $Br\_{2}$ to $BrO\_{3}^{-}$, the oxidation number of Br changes from

 a) Zero to +5 b) +1 to +5 c) Zero to $-$3 d) +2 to +5

146. The oxidation number of Cr in $CrO\_{5}$ is

 a) +3 b) +5 c) +6 d) 0

147. An indicator used for redox reaction is itself :

 a) Either an oxidant or a reductant

 b) Neither an oxidant nor a reductant

 c) Acid or base

 d) None of the above

148. $CrO\_{5}$ reacts with $H\_{2}SO\_{4}$ to give $Cr\_{2}\left(SO\_{4}\right)\_{3}, H\_{2}O$ and $O\_{2}.$ Moles of $O\_{2}$ liberated by 1 mole of $CrO\_{5}$ in this reaction are :

 a) 2.5 b) 1.25 c) 4.5 d) 1.75

149. In the following reaction, $4P+3KOH+3H\_{2}O \rightarrow 3KH\_{2}PO\_{2}+PH\_{3}$

 a) P is only oxidized b) P is only reduced

 c) P is both oxidized as well as reduced d) None of the above

150. Oxidation number of P in $P\_{2}O\_{7}^{4-}$ is :

 a) +3 b) +4 c) +5 d) +6

151. In the conversion of $K\_{2}Cr\_{2}O\_{7} $to $K\_{2}CrO\_{4}$ the oxidation number of chromium :

 a) Increases b) Remains the same c) Decreases d) None of these

152. In which of the following, the oxidation number of oxygen has been arranged in increasing order?

 a) $OF\_{2}<KO\_{2}<BaO\_{2}<O\_{3}$ b) $BaO\_{2}<KO\_{2}<O\_{3}<OF\_{2}$

 c) $BaO\_{2}<O\_{3}<OF\_{2}<KO\_{2}$ d) None of these

153. Oxidation number of sodium in sodium amalgam is :

 a) +2 b) +1 c) −2 d) zero

154. The apparatus in which standard solution is prepared is known as :

 a) Measuring flask b) Round bottom flask c) Burette d) None of these

155. $K\_{3}Fe\left(CN\right)\_{6}$ is used as ……. Indicator for $FeSO\_{4} vs. K\_{2}Cr\_{2}O\_{7}$ titrations.

 a) Self b) External c) Internal d) Not an

156. The oxidation number of N in $N\_{2}H\_{5}^{+}$ is :

 a) −2 b) +3 c) +2 d) −3

157. Which can act as oxidant?

 a) $H\_{2}O\_{2}$ b) $H\_{2}S$ c) $NH\_{3}$ d) None of these

158. What weight of $HNO\_{3}$ is needed to convert 5 g of iodine into iodic acid according to the reaction

 , $I\_{2}+HNO\_{3} ⟶HIO\_{3}+NO\_{2}+H\_{2}O ?$

 a) 12.4 g b) 24.8 g c) 0.248 g d) 49.6 g

159. In which $SO\_{2}$ acts as oxidant, while reacting with :

 a) Acidified $KMnO\_{4}$ b) Acidified $K\_{2}Cr\_{2}O\_{7}$ c) $H\_{2}S$ d) Acidified $C\_{2}H\_{5}OH$

160. $HBr$ and $HI$ reduce $H\_{2}SO\_{4}$, $HCl$ can reduce $KMnO\_{4}$ and $HF$ can reduce:

 a) $H\_{2}SO\_{4}$ b) $K\_{2}Cr\_{2}O\_{7}$ c) $KMnO\_{4}$ d) None of these

161. Equivalent mass of $Na\_{2}S\_{2}O\_{3}$ in its reaction with $I\_{2}$ is equal to :

 a) Molar mass b) Molar mass / 2 c) Molar mass / 3 d) Molar mass / 4

162. Which of the following change represents a disproportionation reaction(s)?

 a) $Cl\_{2}+2OH^{-} ⟶ClO^{-} +Cl^{-} +H\_{2}O$

 b) $Cu\_{2}O+2H^{+} ⟶Cu+Cu^{2+}+H\_{2}O$

 c) 

 d) All of the above

163. Oxidation number of ‘N’ in $N\_{3}H$(hydrazoic acid) is

 a) $-\frac{1}{3}$ b) $+3$ c) 0 d) $-3$

164. Cerric ammonium sulphate and potassium permanganate are used as oxidising agents in acidic medium for oxidation of ferrous ammonium sulphate to ferric sulpahte. The ratio of number of moles of cerric ammonium sulphate required per mole of ferrous ammonium sulphate to the number of moles of $KMnO\_{4}$ required per mole of ferrous ammonium sulphate, is

 a) 5.0 b) 0.2 c) 0.6 d) 2.0

165. Eq.wt. of $NH\_{3}$ in, $NH\_{3}+O\_{2} ⟶NO+H\_{2}O $ is :

 a) 3.4 b) 17 c) 8.5 d) None of these

166. Carbon is in the lowest oxidation state in :

 a) $CH\_{4}$ b) $CCl\_{4}$ c) $CO\_{2}$ d) $CF\_{4}$

167. When the ion $Cr\_{2}O\_{7}^{2-}$ 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 of $Cr\_{2}O\_{7}^{2-}$ ions?

 a) 2/3 b) 3/2 c) 2 d) 3

168. 100 mL of 0.1 *M* solution of a reductant is diluted to 1 litre, which of the following changes?

 a) Molarity b) Millimole c) Milliequivalent d) None of these

169. If $H\_{2}S$ is passed through an acidified $K\_{2}Cr\_{2}O\_{7}$ solution, the colour of the solution :

 a) Will remain unchanged

 b) Will change to deep red

 c) Will change to dark green

 d) Will change to dark brown

170. Ozone tails mercury. The reaction is ….of $Hg$.

 a) Reduction b) Oxidation c) Substitution d) None of these

171. The oxidation number of $Cr$ in $\left[Cr\left(NH\_{3}\right)\_{4}Cl\_{2}\right]^{+}$ is :

 a) +3 b) +2 c) +1 d) zero

172. In the reaction, $VO+Fe\_{2}O\_{3} ⟶FeO+V\_{2}O\_{5}.$ The eq.wt. of $V\_{2}O\_{5}$ is equal to its :

 a) mol. wt. b) mol. wt./8 c) mol. wt./6 d) None of these

173. The eq. wt. of $K\_{2}CrO\_{4}$ as an oxidising agent in acid medium is :

 a) (mol. wt.)/2 b) (2 × mol. wt.)/3 c) (mol. wt.)/3 d) (mol. wt.)/6

174. Which reaction involves neither oxidation nor reduction?

 a) $CrO\_{4}^{2-} ⟶Cr\_{2}O\_{7}^{2-}$ b) $Cr ⟶CrCl\_{3}$ c) $Na ⟶Na^{+}$ d) $2S\_{2}O\_{3}^{2-} ⟶S\_{4}O\_{6}^{2-}$

175. The number of equivalent per mole of $H\_{2}S$ used in its oxidation to $SO\_{2}$ is :

 a) 3 b) 6 c) 4 d) 2

176. Oxidation number of sulphur in $Na\_{2}SO\_{4}$ is :

 a) +2 b) +4 c) +6 d) −2

177. Which can have both +ve and –ve oxidation states?

 a) $F$ b) $I$ c) $Na$ d) $He$

178. Milliequivalent of a solute in a solution can be given by:

 a) $Mz.\_{eq.}=M × V\_{in mL}$

 b) $M\_{eq}. =N × V\_{in mL}$

 c) $Mz\_{eq}. =\frac{wt}{Eq.wt.} ×$ 1000

 d) Both (b) and (c)

179. $H\_{2}S$ is passed through an acidified solution of copper sulphate and a black precipitate is formed. This is due to :

 a) Oxidation of $Cu^{2+}$

 b) Reduction of $Cu^{2+}$

 c) Double decomposition

 d) Reduction and oxidation

180. Iodine has highest oxidation number in the compound :

 a) $KIO\_{4}$ b) $IF\_{5}$ c) $KI\_{2}$ d) $KI$

181. Oxidation number of S in $S\_{2}O\_{3}^{2-}$is :

 a) +2 b) −2 c) 4 d) zero

182. In the reaction, $Cr\_{2}O\_{7}^{2-}+14H^{+} +6I^{-} ⟶2Cr^{3+}+3H\_{2}O+3I\_{2}$, The eq.wt. of $Cr^{3+}$ is :

 a) $\frac{mol.wt.}{3}$ b) $\frac{at.wt.}{6}$ c) $\frac{at.wt.}{3}$ d) $\frac{mol.wt.}{6}$

183. In the reaction, $H\_{2}O\_{2}+Na\_{2}CO\_{3}\rightarrow Na\_{2}O\_{2}+CO\_{2}+H\_{2}O$ the substance undergoing oxidation is

 a) $H\_{2}O\_{2}$ b) $Na\_{2}CO\_{3}$ c) $Na\_{2}O\_{2}$ d) None of these

184. The least count of burette used normally in laboratory is :

 a) 0.1 mL b) 0.01 mL c) 0.2 mL d) 0.02 mL

185. Among $NH\_{3},HNO\_{3,}NaN\_{3}$ and $Mg\_{3}N\_{2};$ the number of molecules having nitrogen in negative oxidation state is

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

186. In which iron has the lowest oxidation state?

 a) $Fe\left(CO\right)\_{5}$

 b) $Fe\_{2}O$

 c) $K\_{4}Fe\left(CN\right)\_{6}$

 d) $FeSO\_{4}.\left(NH\_{4}\right)2SO\_{4}.6H\_{2}O$

187. A chemical balance used normally for weighing in laboratory can weigh upto a least count of :

 a) 0.0001 g b) 0.001 g c) 0.0002 g d) 0.002 g

188. When $NaCl$ is dissolved in water, the sodium ion becomes :

 a) Oxidized b) Reduced c) Hydrolysed d) hydrated

189. Which is not a redox reaction?

 a) $BaO\_{2}+H\_{2}SO\_{4} $⟶ $BaSO\_{4}+H\_{2}O\_{2}$

 b) $2BaO+O\_{2} ⟶2BaO\_{2}$

 c) $4KCIO\_{3} ⟶4KCIO\_{2}+2O\_{2}$

 d) $SO\_{2}+2H\_{2}S ⟶2H\_{2}O+3S$

190. When $BrO\_{3}^{-}$ ion reacts with $Br^{-}$ ion in acidic solution $Br\_{2}$ is liberated. The equivalent weight of $KBrO\_{3}$ is :

 a) $M/8$ b) $M/3$ c) $M/5$ d) $M/6$

191. Corrosion of iron is :

 a) Redox process

 b) Neutralization process

 c) Precipitation process

 d) None of these

192. During a redox titration involving a solution containing $Fe^{2+}$ ions against $MnO\_{4}^{-}$ in the presence of excess of $H^{+}$ ions, the number of electrons that gets transferred is

 a) 6 b) 5 c) 4 d) 2

193. In which of the following oxidation number of chlorine is +5?

 a) $HClO$ b) $HClO\_{2}$ c) $HClO\_{3}$ d) $HClO\_{4}$

194. In the reaction, $Zn+2H^{+} +2Cl^{-} ⟶Zn^{2+} 2Cl^{-} +H\_{2}, $the spectator ion is :

 a) $Cl^{-}$ b) $Zn^{2+}$ c) $H^{+}$ d) All of these

195. Turn bull’s blue is :

 a) $Fe\_{3}\left[Fe\left(CN\right)\_{6}\right]\_{2}$ b) $K\_{4}Fe\left(CN\right)\_{6}$ c) $K\_{3}Fe\left(CN\right)\_{6}$ d) $Na\_{4}Fe\left(CN\right)\_{6}$

196. The oxidation state shown by silicon when it combines with strongly electropositive metals is

 a) $-2$ b) $-4$ c) +4 d) +2

197. The compound that can work both as an oxidising and reducing agent is:

 a) $KMnO\_{4}$ b) $H\_{2}O\_{2}$ c) $Fe\_{2}\left(SO\_{4}\right)\_{3}$ d) $K\_{2}Cr\_{2}O\_{7}$

198. An element $A$ in a compound $ABD$ has oxidation number $A^{n-}$. It is oxidized by $Cr\_{2}O\_{7}^{2-}$ in acidic medium. In the experiment $1.68 × 10^{-3}$ mole of $K\_{2}Cr\_{2}O\_{7}$ 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) $+n$

199. The burning of hydrogen is called :

 a) Hydrogenation b) Hydration c) Oxidation d) reduction

200. Oxidation number of chlorine in chlorine heptaoxide is :

 a) +1 b) +4 c) +6 d) +7

**Time :** 07:02:00 **CHEMISTRY**

**Marks :** 1688

8.REDOX REACTIONS

|  |
| --- |
| **: ANSWER KEY :** |

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| **1) c 2) c 3) a 4) d****5) a 6) d 7) d 8) b****9) c 10) d 11) c 12) d****13) d 14) b 15) d 16) b****17) d 18) a 19) c 20) a****21) b 22) a 23) b 24) c****25) a 26) a 27) d 28) a****29) a 30) d 31) c 32) a****33) a 34) a 35) d 36) c****37) a 38) a 39) b 40) a****41) a 42) d 43) c 44) a****45) c 46) c 47) a 48) b****49) b 50) b 51) b 52) c****53) a 54) a 55) d 56) c****57) a 58) a 59) b 60) c****61) a 62) a 63) a 64) c****65) d 66) c 67) b 68) b****69) a 70) b 71) a 72) b****73) d 74) a 75) c 76) b****77) d 78) b 79) b 80) d****81) a 82) d 83) c 84) a****85) d 86) b 87) c 88) a****89) c 90) b 91) a 92) b****93) b 94) a 95) d 96) c****97) b 98) c 99) b 100) b****101) c 102) b 103) a 104) a****105) a 106) b 107) b 108) a****109) b 110) a 111) b 112) d****113) a 114) a 115) d 116) d****117) c 118) b 119) d 120) b****121) b 122) a 123) b 124) a****125) c 126) a 127) a 128) a****129) d 130) a 131) a 132) b****133) c 134) b 135) a 136) d****137) b 138) a 139) c 140) a****141) c 142) b 143) b 144) b****145) a 146) c 147) a 148) d****149) c 150) c 151) b 152) b****153) d 154) a 155) b 156) a****157) a 158) a 159) c 160) d****161) a 162) d 163) a 164) a****165) a 166) a 167) d 168) a****169) c 170) b 171) a 172) c****173) c 174) a 175) b 176) c****177) b 178) d 179) c 180) a****181) a 182) c 183) d 184) a****185) c 186) a 187) c 188) d****189) a 190) c 191) a 192) b****193) c 194) a 195) a 196) b****197) b 198) b 199) c 200) d** |