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CHEMISTRY

REDOX REACTIONS

Single Correct Answer Type

- Which among the following shows maximum oxidation state?
a) V b) Fe c) Mn d) Cr
- 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
- In the reaction, $\text{CH}_3\text{OH} \rightarrow \text{HCOOH}$, the number of electrons that must be added to the right is:
a) 4 b) 3 c) 2 d) 1
- 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
- In the reaction of O_3 and H_2O_2 , the later acts as :
a) Oxidising agent
b) Reducing agent
c) Bleaching agent
d) Both oxidising and bleaching agent
- Of the following reactions, only one is a redox reaction. Identify this reaction.
a) $\text{Ca}(\text{OH})_2 + 2\text{HCl} \rightarrow \text{CaCl}_2 + 2\text{H}_2\text{O}$ b) $2\text{S}_2\text{O}_7^{2-} + 2\text{H}_2\text{O} \rightarrow 2\text{SO}_4^{2-} + 4\text{H}^+$
c) $\text{BaCl}_2 + \text{MgSO}_4 \rightarrow \text{BaSO}_4 + \text{MgCl}_2$ d) $\text{Cu}_2\text{S} + 2\text{FeO} \rightarrow 2\text{Cu} + 2\text{Fe} + \text{SO}_2$
- 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
- In the equation, $\text{SnCl}_2 + 2\text{HgCl}_2 \rightarrow \text{Hg}_2\text{Cl}_2 + \text{SnCl}_4$. The equivalent weight of stannous chloride (molecular weight = 190) will be :
a) 190 b) 95 c) 47.5 d) 154.5
- The oxoacid which acts both as oxidising and reducing agent is :
a) H_2SO_4 b) H_3PO_4 c) HNO_2 d) HClO_4
- Oxidation state of oxygen is -1 in the compound :
a) NO_2 b) MnO_2 c) PbO_2 d) Na_2O_2
- When sulphur dioxide is passed in an acidified $\text{K}_2\text{Cr}_2\text{O}_7$ 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
- 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
- The number of electrons lost or gained during the change $\text{Fe} + \text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$ is
a) 2 b) 4 c) 6 d) 8
- 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

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) KClO₃ d) KClO₄
36. The number of Fe²⁺ ion oxidised by one mole of MnO₄⁻ 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 (S₈) 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 Fe₂O₃ 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 CuSO₄ 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 H₂O₂ is
a) -1 b) +2 c) + $\frac{1}{2}$ d) -2
42. Which reaction indicates the oxidising behavior of H₂SO₄?
a) 2PCl₅ + H₂SO₄ → 2POCl₃ + 2HCl + SO₂Cl₂
b) 2NaOH + H₂SO₄ → Na₂SO₄ + 2H₂O
c) NaCl + H₂SO₄ → NaHSO₄ + HCl
d) 2HI + H₂SO₄ → I₂ + SO₂ + 2H₂O
43. HCO₃⁻ contains carbon in the oxidation state:
a) +5 b) +1 c) +4 d) zero
44. Oxidation state of oxygen atom in potassium superoxide (KO₂) 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 + AgNO₃ → AgBr + HNO₃
c) H₂ + Br₂ → 2HBr d) Na₂O + H₂SO₄ → Na₂SO₄ + H₂O
46. The number of mole of oxalate ions oxidized by one mole of MnO₄⁻ ion is:
a) 1/5 b) 2/5 c) 5/2 d) 5
47. The number of mole of KMnO₄ 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 IO₄⁻ when it is converted to I₂ in acid medium :
a) M/6 b) M/7 c) M/5 d) M/4
49. The eq. wt. of Fe₃O₄ in , Fe₃O₄ + KMnO₄ → Fe₂O₃ + MnO₂ is:
a) M/6 b) M c) 2M d) M/3
50. What volume of 3 molar HNO₃ is needed to oxidise 8 g of Fe²⁺ to Fe³⁺? HNO₃, 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) HNO₃, NO, NH₄Cl, N₂ b) HNO₃, NO, N₂, NH₄Cl c) HNO₃, NH₄Cl, NO, N₂ d) NO, HNO₃, NH₄Cl, N₂
52. The oxidation states of iodine in HIO₄, H₃IO₅ and H₅IO₆ are respectively
a) +1,+3,+7 b) +7,+7,+3 c) +7,+7,+7 d) +7,+5,+3
53. In which reaction H₂O₂ acts as a reducing agent?
a) Ag₂O + H₂O₂ → 2Ag + H₂O + O₂
b) 2KI + H₂O₂ → 2KOH + I₂
c) PbS + 4H₂O₂ → PbSO₄ + 4H₂O

- d) $\text{H}_2\text{O}_2 + \text{SO}_2 \rightarrow \text{H}_2\text{SO}_4$
54. In the reaction ; $2\text{Ag} + 2\text{H}_2\text{SO}_4 \rightarrow \text{Ag}_2\text{SO}_4 + 2\text{H}_2\text{O} + \text{SO}_2$, H_2SO_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_2S , 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_2O_4 in , $\text{FeC}_2\text{O}_4 \rightarrow \text{Fe}^{3+} + 2\text{CO}_2$ is :
 a) its mol. wt. b) mol. wt./3 c) mol. wt./4 d) None of these
60. Moles of H_2O_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) $\text{Eq. wt.} = \frac{\text{mol. weight of reductant or oxidant}}{\text{no. of electrons lost or gained by 1 molecule of reductant or oxidant}}$
 b) $\text{Eq. wt.} = \frac{\text{mol. wt.}}{\text{valence}}$
 c) $\text{Eq. wt.} = \frac{\text{mol. wt.}}{\text{total charge on cation or anion}}$
 d) All of the above
63. In presence of dil. H_2SO_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. $a\text{K}_2\text{Cr}_2\text{O}_7 + b\text{KCl} + c\text{H}_2\text{SO}_4 \rightarrow x\text{CrO}_2\text{Cl}_2 + y\text{KHSO}_4 + z\text{H}_2\text{O}$.
 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 $\text{H}_2\text{S}_2\text{O}_8$ is :
 a) +2 b) +6 c) +7 d) +14
68. In the following reaction

$$\text{M}^{x+} + \text{MnO}_4 \rightarrow \text{MO}_3 + \text{Mn}^{2+} + \frac{1}{2}\text{O}_2,$$
 If one mole of MnO_4 oxidises 2.5 moles of M^{x+} then the value of x is

- d) $\text{SnCl}_2 + \text{HgCl}_2 \rightarrow \text{SnCl}_4 + \text{Hg}$
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 $\text{KO}_3, \text{Na}_2\text{O}_2$ is
 a) 3,2 b) 1,0 c) 0,1 d) -0.33,-1
86. In the reaction, $\text{I}_2 + 2\text{S}_2\text{O}_3^{2-} \rightarrow 2\text{I}^- + \text{S}_4\text{O}_6^{2-}$, 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_2S needed to precipitate all the metal ions from 100 mL 1M AgNO_3 and 100 mL of 1M CuSO_4 is :
 a) 1 : 2 b) 2 : 1 c) Zero d) infinite
89. Oxidation state of sulphur in $\text{Na}_2\text{S}_2\text{O}_3$ and $\text{Na}_2\text{S}_4\text{O}_6$
 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) $\text{CrO}_4^{2-} \rightarrow \text{CrO}_7^{2-}$ b) $\text{BrO}_3^- \rightarrow \text{BrO}^-$ c) $\text{H}_2\text{O}_2 \rightarrow \text{O}_2$ d) $\text{Al}(\text{OH})_3 \rightarrow \text{Al}(\text{OH})_4^-$
93. In the reaction, $\text{N}_2 \rightarrow \text{NH}_3$. 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) $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$ b) $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$
 c) $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$ d) $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$
97. The difference in the oxidation numbers of the two types of sulphur atoms in $\text{Na}_2\text{S}_4\text{O}_6$ 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_1Z_2 b) $\text{Y}_2(\text{XZ}_3)_2$ c) $\text{X}_3(\text{YZ}_4)_2$ d) $\text{X}_3(\text{Y}_4\text{Z})_2$
99. The equivalent weight of SnCl_2 in the reaction, $\text{SnCl}_2 + \text{Cl}_2 \rightarrow \text{SnCl}_4$ is :
 a) 49 b) 95 c) 45 d) 59
100. What is the ox. no. of Mn in K_2MnO_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_2O_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_2O_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 $\text{Ni}(\text{CO})_4$ 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_2MnO_4 is :
 a) M b) $M/3$ c) $M/5$ d) $M/7$
106. Oxidation number of Mn in K_2MnO_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?
 $\text{H}_2\text{O} + \text{Br}_2 \rightarrow \text{HBr} + \text{HOBr}$
 a) Proton accepted only b) Both oxidised and reduced
 c) Oxidised only d) Reduced only
108. The oxidation number of P in KH_2PO_2 is :
 a) +1 b) +3 c) -3 d) +5
109. LiAlH_4 is used as :
 a) Oxidising agent b) Reducing agent c) A mordant d) Water softner
110. The brown ring complex $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}^+]\text{SO}_4$ has ox.no. of Fe :
 a) +1 b) +2 c) +3 d) +4
111. The oxidation state of Fe in Fe_3O_4 is
 a) +3 b) 8/3 c) +6 d) +2
112. In the reactions; $\text{As}_2\text{S}_3 + \text{HNO}_3 \rightarrow \text{H}_3\text{AsO}_4 + \text{H}_2\text{SO}_4 + \text{NO}$, 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, $\text{MnO}_4^- + \text{Mn}^{2+} + \text{H}_2\text{O} \rightarrow \text{MnO}_2 + \text{H}^+$ (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_3IO_5 c) H_5IO_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 $\text{K}_3[\text{Fe}(\text{CN})_6]$ is :
 a) +2 b) +3 c) +4 d) +1
119. One mole of acidified $\text{K}_2\text{Cr}_2\text{O}_7$ 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,
 $KMnO_4 + H_2SO_4 + H_2O_2 \rightarrow KHSO_4 + MnSO_4 + H_2O + O_2$:
- 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,
 $14H^+ + Cr_2O_7^{2-} + 3Ni \rightarrow 2Cr^{3+} + 7H_2O + 3Ni^{2+}$?
- a) H_2O b) Ni c) H^+ d) $Cr_2O_7^{2-}$
124. Which of the following chemical reactions depicts the oxidising 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) $2PCl_5 + H_2SO_4 \rightarrow 2POCl_3 + 2HCl + SO_2Cl_2$
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, $SO_2 + 2H_2S \rightarrow 3S + 2H_2O$ the substance that oxidizes is,
- a) H_2S b) SO_2 c) S d) H_2O
127. The oxidation number of sulphur in S_8 , S_2F_2 , H_2S 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_2Cl_2 and MnO_4^-
 b) MnO_2
 c) $[Fe(CN)_6]^{3-}$ and $[Co(CN)_6]^{3-}$
 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_2SO_3 as, $NaClO + H_2SO_3 \rightarrow NaCl + H_2SO_4$
 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) $H_2 + Br_2 \rightarrow 2HBr$
 b) $NH_4Cl \rightarrow NH_3 + HCl$
 c) $NH_4NO_3 \rightarrow N_2O + 2H_2O$
 d) $Fe + S \rightarrow FeS$
135. In $C + H_2O \rightarrow CO + H_2$; H_2O 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) $M \times V_{in \text{ litre}}$ b) $M \times V_{in \text{ mL}}$ c) $\frac{wt.}{mol. wt.} \times 1000$ d) Both (b) and (c)
137. The oxidation number of carbon in $H_2C_2O_4$ is :
- a) +2 b) +3 c) +4 d) +1
138. What is the oxidation state of P in $Ba(H_2PO_2)_2$?

- a) +1 b) +2 c) +3 d) -1
139. Oxidation state of +1 for phosphorus is found in :
 a) H_3PO_3 b) H_3PO_4 c) H_3PO_2 d) $H_4P_2O_7$
140. Oxidation number of S in $(CH_3)_2SO$ is :
 a) Zero b) +1 c) +2 d) +3
141. In which reaction the underlined substance has been reduced?
 a) Carbon monoxide + copper oxide \rightarrow carbon dioxide + copper
 b) Copper oxide + hydrochloric acid \rightarrow water + copper chloride
 c) Steam + iron \rightarrow hydrogen + iron oxide
 d) Hydrogen + iron oxide \rightarrow water + iron
142. The decomposition of $KClO_3$ 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_2SO_4 to give $Cr_2(SO_4)_3$, H_2O 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, $4P + 3KOH + 3H_2O \rightarrow 3KH_2PO_2 + PH_3$
 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 $P_2O_7^{4-}$ is :
 a) +3 b) +4 c) +5 d) +6
151. In the conversion of $K_2Cr_2O_7$ to K_2CrO_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. $K_3Fe(CN)_6$ is used as Indicator for $FeSO_4$ vs. $K_2Cr_2O_7$ titrations.
 a) Self b) External c) Internal d) Not an

156. The oxidation number of N in $N_2H_5^+$ is :
 a) -2 b) +3 c) +2 d) -3
157. Which can act as oxidant?
 a) H_2O_2 b) H_2S 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, $I_2 + HNO_3 \rightarrow HIO_3 + NO_2 + H_2O$?
 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 $K_2Cr_2O_7$ c) H_2S d) Acidified C_2H_5OH
160. HBr and HI reduce H_2SO_4 , HCl can reduce $KMnO_4$ and HF can reduce:
 a) H_2SO_4 b) $K_2Cr_2O_7$ c) $KMnO_4$ d) None of these
161. Equivalent mass of $Na_2S_2O_3$ 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) $Cl_2 + 2OH^- \rightarrow ClO^- + Cl^- + H_2O$
 b) $Cu_2O + 2H^+ \rightarrow Cu + Cu^{2+} + H_2O$
 c) $2HCuCl_2 \xrightarrow[\text{water}]{\text{Dilution with}} Cu + Cu^{2+} + 4Cl^- + 2H^+$
 d) All of the above
163. Oxidation number of 'N' in N_3H (hydrazoic acid) is
 a) $-\frac{1}{3}$ b) +3 c) 0 d) -3
164. Ceric ammonium sulphate and potassium permanganate are used as oxidising agents in acidic medium for oxidation of ferrous ammonium sulphate to ferric sulphate. The ratio of number of moles of ceric 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, $NH_3 + O_2 \rightarrow NO + H_2O$ 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 $Cr_2O_7^{2-}$ 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 of $Cr_2O_7^{2-}$ 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_2S is passed through an acidified $K_2Cr_2O_7$ 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 isof Hg.
 a) Reduction b) Oxidation c) Substitution d) None of these
171. The oxidation number of Cr in $[Cr(NH_3)_4Cl_2]^+$ is :
 a) +3 b) +2 c) +1 d) zero
172. In the reaction, $VO + Fe_2O_3 \rightarrow FeO + V_2O_5$. The eq.wt. of V_2O_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_2CrO_4 as an oxidising agent in acid medium is :
 a) (mol. wt.)/2 b) $(2 \times \text{mol. wt.})/3$ c) (mol. wt.)/3 d) (mol. wt.)/6
174. Which reaction involves neither oxidation nor reduction?

- a) $\text{CrO}_4^{2-} \rightarrow \text{Cr}_2\text{O}_7^{2-}$ b) $\text{Cr} \rightarrow \text{CrCl}_3$ c) $\text{Na} \rightarrow \text{Na}^+$ d) $2\text{S}_2\text{O}_3^{2-} \rightarrow \text{S}_4\text{O}_6^{2-}$
175. The number of equivalent per mole of H_2S used in its oxidation to SO_2 is :
 a) 3 b) 6 c) 4 d) 2
176. Oxidation number of sulphur in Na_2SO_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) $Mz_{\text{eq.}} = M \times V_{\text{in mL}}$
 b) $M_{\text{eq.}} = N \times V_{\text{in mL}}$
 c) $Mz_{\text{eq.}} = \frac{\text{wt}}{\text{Eq.wt.}} \times 1000$
 d) Both (b) and (c)
179. H_2S 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 $\text{S}_2\text{O}_3^{2-}$ is :
 a) +2 b) -2 c) 4 d) zero
182. In the reaction, $\text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ + 6\text{I}^- \rightarrow 2\text{Cr}^{3+} + 3\text{H}_2\text{O} + 3\text{I}_2$, The eq.wt. of Cr^{3+} is :
 a) $\frac{\text{mol. wt.}}{3}$ b) $\frac{\text{at. wt.}}{6}$ c) $\frac{\text{at. wt.}}{3}$ d) $\frac{\text{mol. wt.}}{6}$
183. In the reaction, $\text{H}_2\text{O}_2 + \text{Na}_2\text{CO}_3 \rightarrow \text{Na}_2\text{O}_2 + \text{CO}_2 + \text{H}_2\text{O}$ the substance undergoing oxidation is
 a) H_2O_2 b) Na_2CO_3 c) Na_2O_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_3N_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) $\text{Fe}(\text{CO})_5$
 b) Fe_2O
 c) $\text{K}_4\text{Fe}(\text{CN})_6$
 d) $\text{FeSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$
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) $\text{BaO}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{H}_2\text{O}_2$
 b) $2\text{BaO} + \text{O}_2 \rightarrow 2\text{BaO}_2$
 c) $4\text{KClO}_3 \rightarrow 4\text{KClO}_2 + 2\text{O}_2$
 d) $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$
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, $\text{Zn} + 2\text{H}^+ + 2\text{Cl}^- \rightarrow \text{Zn}^{2+} + 2\text{Cl}^- + \text{H}_2$, the spectator ion is :
 a) Cl^- b) Zn^{2+} c) H^+ d) All of these
195. Turn bull's blue is :
 a) $\text{Fe}_3[\text{Fe}(\text{CN})_6]_2$ b) $\text{K}_4\text{Fe}(\text{CN})_6$ c) $\text{K}_3\text{Fe}(\text{CN})_6$ d) $\text{Na}_4\text{Fe}(\text{CN})_6$
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_2O_2 c) $\text{Fe}_2(\text{SO}_4)_3$ d) $\text{K}_2\text{Cr}_2\text{O}_7$
198. An element A in a compound ABD has oxidation number A^{n-} . It is oxidized by $\text{Cr}_2\text{O}_7^{2-}$ in acidic medium. In the experiment 1.68×10^{-3} mole of $\text{K}_2\text{Cr}_2\text{O}_7$ 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
201. The correct order of reducing power of halide ions is :
 a) $\text{Cl}^- > \text{Br}^- > \text{I}^- > \text{F}^-$
 b) $\text{Cl}^- > \text{I}^- > \text{Br}^- > \text{F}^-$
 c) $\text{Br}^- > \text{Cl}^- > \text{I}^- > \text{F}^-$
 d) $\text{I}^- > \text{Br}^- > \text{Cl}^- > \text{F}^-$
202. The reaction, $3\text{ClO}^-(aq) \rightarrow \text{ClO}_3^-(aq) + 2\text{Cl}^-(aq)$ is an example of :
 a) Oxidation reaction
 b) Reduction reaction
 c) Disproportionation reaction
 d) Decomposition reaction
203. The ox.no. of S in $\text{Na}_2\text{S}_4\text{O}_6$ is :
 a) + 2.5
 b) +2 and +3 (two S have +2 and other two have +3)
 c) +2 and +3 (three S have +2 and one S has +3)
 d) +5 and 0 (two S have +5 and the other two S have 0)
204. Oxidation is a process which involves :
 a) de-electronation b) Electronation c) Addition of hydrogen d) Addition of metal
205. A student states that heating of limestone is an oxidation process, the reason he gives that an oxide of the metal is produced on heating. Which one is correct?
 a) The statement and reason are true
 b) The statement and reason are wrong
 c) The statement is true but the reason is false
 d) None of the above
206. A sulphur containing species that cannot be an oxidising agent is :
 a) H_2SO_4 b) H_2S c) SO_2 d) H_2SO_3

207. KMnO_4 acts as indicator in its redox titrations.
 a) Self b) External c) Internal d) Not an
208. In a reaction between zinc and iodine in which zinc iodide is formed, which is oxidised?
 a) Zinc ions b) Iodide ions c) Zinc atom d) Iodine
209. The best oxidising agent of the oxygen family is:
 a) Tellurium b) Selenium c) Sulphur d) Oxygen
210. The oxidation state of iron in sodium nitroprusside is :
 a) +2 b) +1 c) Zero d) +3
211. 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
212. Which combination is odd with respect to oxidation numbers of S, Cr, N and H respectively:
 a) $\text{H}_2\text{SO}_5, \text{H}_2\text{S}_2\text{O}_8, \text{H}_2\text{SO}_4, \text{SF}_6$
 b) $\text{K}_2\text{Cr}_2\text{O}_7, \text{K}_2\text{CrO}_4, \text{CrO}_5, \text{CrO}_2\text{Cl}_2$
 c) $\text{NH}_3, \text{NH}_4^+, \text{N}_3\text{H}, \text{NO}_2^-$
 d) $\text{CaH}_2, \text{NaH}, \text{LiH}, \text{MgH}_2$
213. 0.2 g of a sample of H_2O_2 required 10 mL of N KMnO_4 in a titration in the presence of H_2SO_4 . Purity of H_2O_2 is :
 a) 25% b) 85% c) 65% d) 95%
214. When KMnO_4 as oxidising agent and ultimately forms $\text{MnO}_4^{2-}, \text{Mn}_2\text{O}_3$ and Mn^{2+} , the number of electrons transferred per mole of KMnO_4 each case respectively is :
 a) 4, 3, 1, 5 b) 1, 5, 3, 7 c) 1, 3, 4, 5 d) 1, 3, 8, 5
215. Titration of KI with H_2O_2 in presence of acid is a :
 a) Clock reaction b) Redox reaction c) Intermolecular redox d) All of these
216. Oxidation state of nitrogen is incorrectly given for :

Compound	Oxidation state
a) $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{Cl}_2$	-3
b) NH_2OH	-1
c) $(\text{N}_2\text{H}_5)_2\text{SO}_4$	+2
d) Mg_3N_2	-3
217. Fluorine exhibits only -1 oxidation state, while iodine exhibits oxidation states of -1, +1, +3, +5 and +7. This is due to :
 a) Fluorine being a gas
 b) Available d -orbitals in iodine
 c) Non-availability of d -orbitals in iodine
 d) None of the above
218. Elements which generally exhibit multiple oxidation states and whose ions are coloured are known as :
 a) Metalloid b) Non-metals c) Metals d) Transition metals
219. The oxidation state of sulphur in sodium tetrathionate ($\text{Na}_2\text{S}_4\text{O}_6$) is
 a) 2 b) 0 c) 2.5 d) 3.5
220. Which is strongest oxidising agent?
 a) O_3 b) O_2 c) Cl_2 d) F_2
221. Sulphur has the highest oxidation state in :
 a) SO_2 b) SO_3 c) H_2SO_3 d) H_2S
222. Nitrogen has fractional oxidation number in :
 a) N_2H_4 b) NH_4 c) HN_3 d) N_2F_2
223. As the oxidation state for any metal increases, the tendency to show ionic nature:
 a) Decreases b) Increases c) Remains same d) None of these
224. In acid medium Zn reduces nitrate ion to NH_4^+ ion according to the reaction

$$\text{Zn} + \text{NO}_3^- \rightarrow \text{Zn}^{2+} + \text{NH}_4^+ + \text{H}_2\text{O} \quad (\text{unbalanced})$$
 How many moles of HCl are required to reduce half a mole of NaNO_3 completely? Assume the availability

- a) 33% b) 66% c) 70% d) 40%
242. How many litre of Cl_2 at STP will be liberated by the oxidation of NaCl with 10 g KMnO_4 ?
 a) 3.54 litre b) 7.08 litre c) 1.77 litre d) None of these
243. What is the normality of a KMnO_4 solution to be used as an oxidant in acid medium, which contain 15.8 g of the compound in 100 mL of solution? Mol. wt. of KMnO_4 is 158 :
 a) 2 N b) 3 N c) 4 N d) 5 N
244. KMnO_4 in acid medium is always reduced to :
 a) Mn^{4+} b) Mn^{2+} c) Mn^{6+} d) Mn
245. In balancing the half reaction, $\text{S}_2\text{O}_3^{2-} \rightarrow \text{S}(s)$, the number of electrons that must be added is :
 a) 2 on the right b) 2 on the left c) 3 on the right d) 4 on the left
246. What volume of 0.1 M KMnO_4 is needed to oxidise 100 mg of FeC_2O_4 in acidic solution?
 a) 4.1 mL b) 8.2 mL c) 10.2 mL d) 4.6 mL
247. Which one is not a redox titration?
 a) FeSO_4 vs. $\text{K}_2\text{Cr}_2\text{O}_7$ b) CuSO_4 vs. hypo c) I_2 vs. hypo d) AgNO_3 vs. KCl
248. A 0.518 g sample of lime stone is dissolved in HCl and then the calcium is precipitated as CaC_2O_4 . After filtering and washing the precipitate, it requires 40.0 mL of 0.250 N KMnO_4 , solution acidified with H_2SO_4 to titrate is as, $\text{MnO}_4^- + \text{H}^+ + \text{C}_2\text{O}_4^{2-} \rightarrow \text{Mn}^{2+} + \text{CO}_2 + 2\text{H}_2\text{O}$. The percentage of CaO in the sample is :
 a) 54.0 % b) 27.1 % c) 42% d) 84%
249. The missing term in following equation is : $2\text{Fe}^{3+}(aq) + \text{Sn}^{2+}(aq) \rightarrow 2\text{Fe}^{2+}(aq) + ?$
 a) Sn^{4+} b) Sn^{2+} c) Sn d) None of these
250. Reaction of Br_2 with Na_2CO_3 in aqueous solution gives sodium bromide and sodium bromate with evolution of CO_2 gas. The number of sodium bromide molecules involved in the balanced chemical equation is
 a) 1 b) 3 c) 5 d) 7
251. 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) $-2/3$, $+4/3$
252. The reaction; $\text{KI} + \text{I}_2 \rightarrow \text{KI}_3$ shows :
 a) Oxidation b) Reduction c) Complex formation d) All of these
253. The oxidation state of Cr in chromium trioxide is
 a) +3 b) +4 c) +5 d) +6
254. Oxidation number of S in S_2Cl_2 is :
 a) +1 b) +6 c) Zero d) -1
255. In which of the following N has lowest oxidation number?
 a) NO b) NO_2 c) N_2O d) N_2O_5
256. 2 mole of FeSO_4 are oxidized by 'X' mole of KMnO_4 whereas 2 mole of FeC_2O_4 are oxidized by 'Y' mole of KMnO_4 . The ration f 'X' and 'Y' is :
 a) 1 : 3 b) 1 : 2 c) 1 : 4 d) 1 : 5
257. H_2S reacts with halogens, the halogens :
 a) Are oxidised b) Are reduced c) Form sulphur halides d) None of these
258. In an experiment 50 mL of 0.1 M solution of a salt reacted with 25 mL of 0.1 M solution of sodium sulphite. The half equation for the oxidation of sulphite ion is :
 $\text{SO}_3^{2-}(aq) + \text{H}_2\text{O}(l) \rightarrow \text{SO}_4^{2-}(aq) + 2\text{H}^+(aq) + 2e^-$
 If the oxidation number of metal in the salt was 3, what would be the new oxidation number of metal?
 a) Zero b) 1 c) 2 d) 4
259. The most stable oxidation state of copper is :
 a) +2 b) +1 c) +3 d) +4
260. White phosphorus reacts with caustic soda, the products are PH_3 and NaH_2PO_2 . This reaction is an example of
 a) Oxidation b) Reduction c) Disproportionation d) Neutralisation
261. When a sulphur atom becomes a sulphide ion :

- a) It gains two electrons
 b) The mass number changes
 c) There is no change in the composition of atom
 d) None of the above
262. Titre value is the volume of titrant used for a definite amount of unknown reagent at its :
 a) Equivalence point b) End point c) Neutralization point d) All of these
263. Oxidation states of X, Y, Z are +2, +5 and -2 respectively. Formula of the compound formed by these will be
 a) X_2YZ_6 b) XY_2Z_6 c) XY_5 d) X_3YZ_4
264. In which compound, oxygen has an oxidation state of +2 ?
 a) H_2O_2 b) H_2O c) OF_2 d) CO
265. If equal volumes of 1M $KMnO_4$ and 1 M $K_2Cr_2O_7$ solutions are allowed to oxidise F^{2+} to F^{3+} in acidic medium volume of oxidant required for one mole of F^{2+} will be :
 a) $V_{KMnO_4} > V_{K_2Cr_2O_7}$
 b) $V_{KMnO_4} < V_{K_2Cr_2O_7}$
 c) $V_{KMnO_4} = V_{K_2Cr_2O_7}$
 d) Nothing can be predicted
266. How many gram of $KMnO_4$ should be taken to make up 250 mL of a solution of such strength that 1 mL is equivalent to 5.0 mg of Fe in $FeSO_4$?
 a) 1.414 g b) 0.70 g c) 3.16 g d) 1.58 g
267. The oxidation number of Cr in K_2CrO_4 is
 a) +3 b) -6 c) +6 d) -3
268. In the reaction, $2Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$, the oxidation state of sulphur is :
 a) Decreased b) Increased c) Unchanged d) None of these
269. The equivalent weight of $KMnO_4$ (acidic medium) is (at. wt. of K = 39; Mn = 55) :
 a) 158 b) 15.8 c) 31.6 d) 3.16
270. The oxidation number of chromium in potassium dichromate is
 a) +2 b) +4 c) +6 d) +8
271. The equivalent weight of $MnSO_4$ is half of its molecular weight when it is converted to :
 a) Mn_2O_3 b) MnO_2 c) MnO_4^- d) Mn_4^{2-}
272. Aqueous solution of SO_2 reacts with H_2S to precipitate sulphur. Here SO_2 acts as :
 a) Catalyst b) Reducing agent c) Oxidizing agent d) Acid
273. Saline hydrides are :
 a) Strong oxidants
 b) Strong reductants
 c) Strong dehydrating agents
 d) Strong bleaching agents
274. State the oxidation number of carbonyl carbon in methanal and methanoic acid respectively
 a) 0 and 0 b) 0 and +2 c) +1 and +2 d) +1 and +3
275. The eq. wt. of I_2 in the change $I_2 \rightarrow IO_3^-$ is :
 a) 12.7 b) 63.5 c) 25.4 d) 2.54
276. Equivalent mass of oxidizing agent in the reaction is.
 $SO_2 + 2H_2S \rightarrow 3S + 2H_2O$
 a) 32 b) 64 c) 16 d) 8
277. In a conjugate pair of reductant and oxidant, the reductant has :
 a) Lower ox.no. b) Higher ox.no. c) Same ox.no. d) Either of these
278. In which of the following reactions, hydrogen is acting as an oxidising agent?
 a) With Li to form LiH b) With I_2 to give HI c) With S to give H_2S d) None of the above
279. The number of moles of Mohr's salt required per mole of dichromate ion is :
 a) 3 b) 4 c) 5 d) 6

280. For reducing one mole of Fe^{2+} ion to Fe, the number of faraday of electricity is :
 a) 2 b) 1 c) 1.5 d) 4
281. $\text{Co}(s) + \text{Cu}^{2+}(aq) \rightarrow \text{Co}^{2+}(aq) + \text{Cu}(s)$. This reaction is :
 a) Oxidation reaction b) Reduction reaction c) Redox reaction d) None of these
282. The oxidation state of I in H_4IO_6^- is :
 a) +7 b) -1 c) +5 d) +1
283. The oxidation number of N in NH_3 is :
 a) -3 b) +3 c) Zero d) 5
284. Mn^{2+} can be converted into Mn^{7+} by reacting with
 a) SO_2 b) Cl_2 c) PbO_2 d) SnCl_2
285. The oxidation number of Ni in $\text{K}_4[\text{Ni}(\text{CN})_4]$ is :
 a) +1 b) +2 c) -1 d) 0
286. Which change occur when lead monoxide is converted into lead nitrate?
 a) Oxidation
 b) Reduction
 c) Neither oxidation nor reduction
 d) Both oxidation and reduction
287. How many mole of electron are involved in the reduction of one mole of MnO_4^- ion in alkaline medium to MnO_3^- ?
 a) 2 b) 1 c) 3 d) 4
288. The oxidation number of Fe in $\text{K}_4\text{Fe}(\text{CN})_6$ is :
 a) +2 b) +3 c) +4 d) +6
289. For the reaction, $\text{NH}_3 + \text{OCl}^- \rightarrow \text{N}_2\text{H}_4 + \text{Cl}^-$
 occurring in basic medium, the coefficient of N_2H_4 in the balanced equation will be
 a) 1 b) 2 c) 3 d) 4
290. In the reaction $\text{H}_2\text{O} + \text{H}_2\text{O}_2 \rightarrow \text{S} + 2\text{H}_2\text{O}$
 a) H_2S is an acid and H_2O_2 is a base
 b) H_2S is a base and H_2O_2 is an acid
 c) H_2S is an oxidising agent and H_2O_2 is a reducing agent
 d) H_2S is a reducing agent and H_2O_2 is an oxidising agent
291. When H_2SO_3 is converted into H_2SO_4 the change in the oxidation state of sulphur is from:
 a) 0 to +2 b) +2 to +4 c) +4 to +2 d) +4 to +6
292. The oxidation number of nitrogen in NH_2OH is :
 a) +1 b) -1 c) -3 d) -2
293. In the reaction, $2\text{CuSO}_4 + 4\text{KI} \rightarrow \text{Cu}_2\text{I}_2 + 2\text{K}_2\text{SO}_4 + \text{I}_2$ The ratio of equivalent weight of CuSO_4 to its molecular weight is :
 a) 1/8 b) 1/4 c) 1/2 d) 1
294. In the reaction between acidified $\text{K}_2\text{Cr}_2\text{O}_7$ and iron (II) ions shown by the equation : $\text{Cr}_2\text{O}_7^{2-}(aq) + 6\text{Fe}^{2+}(aq) + 14\text{H}^+(aq) \rightarrow 2\text{Cr}^{3+}(aq) + 7\text{H}_2\text{O}(l) + 6\text{Fe}^{3+}(aq)$
 a) The colour of the solution changes from green to blue
 b) The iron (II) ions are reduced
 c) The dichromate ions are reduced
 d) Hydrogen ions are reduced
295. Which is the reducing agent in the reaction, $8\text{H}^+ + 4\text{NO}_3^- + 6\text{Cl}^- + \text{Sn}(s) \rightarrow \text{SnCl}_6^{2-} + 4\text{NO}_2 + 4\text{H}_2\text{O}$?
 a) $\text{Sn}(s)$ b) Cl^- c) NO_3^- d) $\text{NO}_2(g)$
296. Which is a redox reaction?
 a) $\text{H}_2\text{SO}_4 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$
 b) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{HCl}$
 c) $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \rightarrow \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$
 d) $2\text{FeCl}_3 + \text{SnCl}_2 \rightarrow 2\text{FeCl}_2 + \text{SnCl}_4$

297. Which one of the following reactions involves disproportionation?
 a) $2\text{H}_2\text{SO}_4 + \text{Cu} \rightarrow \text{CuSO}_4 + 2\text{H}_2\text{O} + \text{SO}_2$ b) $\text{As}_2\text{O}_3 + 3\text{H}_2\text{S} \rightarrow \text{As}_2\text{S}_3 + 3\text{H}_2\text{O}$
 c) $2\text{KOH} + \text{Cl}_2 \rightarrow \text{KCl} + \text{KOCl} + \text{H}_2\text{O}$ d) $\text{Ca}_3\text{P}_2 + 6\text{H}_2\text{O} \rightarrow 3\text{Ca(OH)}_2 + 2\text{PH}_3$
298. The oxidation state of chromium in the final product formed by the reaction between KI and acidified potassium dichromate solution is
 a) +3 b) +2 c) +6 d) +4
299. Which of the following acts as an oxidising as well as reducing agent?
 a) Na_2O b) Na_2O_2 c) NaNO_3 d) NaNO_2
300. Oxidation state of carbon in graphite is:
 a) Zero b) +1 c) +4 d) +2
301. Which compound has oxidation number of carbon equal to zero?
 a) C_6H_6 b) CH_3 c) C_2H_4 d) $\text{C}_6\text{H}_{12}\text{O}_6$
302. In the reaction, $2\text{KMnO}_4 + 16\text{HCl} \rightarrow 2\text{KCl} + 2\text{MnCl}_2 + 8\text{H}_2\text{O} + 5\text{Cl}_2$, the reduction product is :
 a) Cl_2 b) MnCl_2 c) KCl d) H_2O
303. The oxidation number of phosphorus in $\text{Mg}_2\text{P}_2\text{O}_7$ is :
 a) +5 b) -5 c) +6 d) -7
304. 1 mole of chlorine combines with a certain weight of a metal giving 111 g of its chloride. The atomic weight of the metal (assuming its valency to be 2) is :
 a) 40 b) 20 c) 80 d) None of these
305. Oxidation state of chromium
-
- a) +10 b) +6 c) +3 d) +2
306. 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
307. The colour of $\text{K}_2\text{Cr}_2\text{O}_7$ changes from red-orange to lemon-yellow on treatment with $\text{KOH}(aq)$ 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
308. How many electrons are involved in oxidation of KMnO_4 in basic medium?
 a) 1 b) 2 c) 5 d) 3
309. The oxidation state of nitrogen in NH_4NO_3 is :
 a) -3 and +5 b) +3 and +5 c) +5 d) +3
310. When Sn(IV) chloride is treated with excess HCl, the complex $[\text{SnCl}_6]^{2-}$ is formed. The oxidation state of Sn in this complex is:
 a) +6 b) -2 c) +4 d) -5
311. Oxidation number of chlorine in HOCl is :
 a) Zero b) -1 c) +1 d) +2
312. In the reaction, $\text{C} + 4\text{HNO}_3 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} + 4\text{NO}_2$, HNO_3 acts as :
 a) An oxidising agent
 b) An acid
 c) An acid as well as oxidising agent
 d) A reducing agent
313. Change of hydrogen into proton is :
 a) Oxidation of hydrogen

- b) Acid-base reaction
 c) Reduction of hydrogen
 d) Displacement reaction
314. 8 g of sulphur are burnt to form SO_2 which is oxidised by Cl_2 water. The solution is treated with BaCl_2 solution. The amount of BaSO_4 precipitated is :
 a) 1.0 mole b) 0.5 mole c) 0.24 mole d) 0.25 mole
315. The number of mole of ferrous oxalate oxidised by one mole of KMnO_4 is:
 a) 1/5 b) 3/5 c) 2/3 d) 5/3
316. Reactants react in the equal number of to give products.
 a) Mole b) Weights c) Equivalent d) All of these
317. Mole and millimole of reactants react in theas represented by balanced stoichiometric equation.
 a) Molar ratio b) Equal amount c) Both (a) and (b) d) None of these
318. The reaction of white phosphorus with aqueous NaOH gives phosphine along with another phosphorus containing compound. The reaction type the oxidation states of phosphorus 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 $+3$
319. Which can act only as oxidising agent?
 a) Oxygen b) Fluorine c) Iodine d) H_2O_2
320. For the reaction : $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$; if E_1 and E_2 are equivalent masses of NH_3 and N_2 respectively, then $E_1 - E_2$ is :
 a) 1 b) 2 c) 3 d) 4
321. Bleaching action of SO_2 is due to :
 a) Reduction b) Oxidation c) Hydrolysis d) Acidic nature
322. In $\text{N}_2 + 2\text{H}_2\text{O} \rightarrow \text{NH}_4^+ + \text{NO}_2^-$; N is :
 a) Oxidised b) Reduced c) Both (a) and (b) d) None of these
323. If three electrons are lost by a metal ion M^{3+} , its final oxidation number will be :
 a) Zero b) $+6$ c) $+2$ d) $+4$
324. In the reaction, $\text{NaH} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$:
 a) H^- is oxidised
 b) Na^+ is reduced
 c) Both NaH and H_2O are reduced
 d) None of the above
325. Which of the following acts as an oxidizing agent?
 a) HNO_3 b) Cl_2 c) FeCl_3 d) All of these
326. How many gram of I_2 are present in a solution which requires 40 mL, of 0.11 N $\text{Na}_2\text{S}_2\text{O}_3$ to react with it, $\text{S}_2\text{O}_3^{2-} + \text{I}_2 \rightarrow \text{S}_4\text{O}_6^{2-} + 2\text{I}^-$?
 a) 12.7 g b) 0.558 g c) 25.4 g d) 11.4 g
327. The number of mole of KMnO_4 that will be needed to react with one mole of sulphite ion in acidic solution is :
 a) 2/5 b) 3/5 c) 4/5 d) 1
328. What weight of HNO_3 is required to make 1 litre of 2 N solution to be used as an oxidising agent in the reaction? $3\text{Cu} + 8\text{HNO}_3 \rightarrow 3\text{Cu}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$
 a) 63 g b) 21 g c) 42 g d) 84 g
329. The oxidation state of two sulphur atoms in $\text{H}_2\text{S}_2\text{O}_8$
 a) -6 b) -2 c) $+6$ d) -4
330. In a conjugate pair of reductant and oxidant, the oxidant has :
 a) Higher ox.no. b) Lower ox.no. c) Same ox.no. d) Either of these

331. In the equation, $\text{H}_2\text{S} + 2\text{HNO}_3 \rightarrow 2\text{H}_2\text{O} + 2\text{NO}_2 + \text{S}$. The equivalent weight of hydrogen sulphide is :
 a) 17 b) 34 c) 68 d) 18
332. In which transfer of five electrons takes place?
 a) $\text{MnO}_4^- \rightarrow \text{Mn}^{2+}$ b) $\text{CrO}_4^{2-} \rightarrow \text{Cr}^{3+}$ c) $\text{MNO}_4^- \rightarrow \text{MnO}_2$ d) $\text{Cr}_2\text{O}_7^{2-} \rightarrow 2\text{Cr}^{3+}$
333. Oxidation number of nitrogen is highest in
 a) N_3H b) N_2O_4 c) NH_2OH d) NH_3
334. Starch gives blue colour with :
 a) KI b) I_2 c) Cl_2 d) None of these
335. The number of mole of potassium salt, *i.e.*, $\text{KHC}_2\text{O}_4 \cdot \text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ oxidised by one mole of permanganate ion is :
 a) 2/5 b) 4/5 c) 1 d) 5/4
336. When an acidified solution of ferrous ammonium sulphate is treated with KMnO_4 solution, the ion which is oxidised is :
 a) Fe^{2+} b) SO_4^{2-} c) NH_4^+ d) MnO_4^-
337. Oxidation number of N in N_3H is :
 a) -3 b) +3 c) Zero d) -1/3
338. Hydrogen peroxide in aqueous solution decomposes on warming to give oxygen according to the equation, $2\text{H}_2\text{O}_2(\text{aq}) \rightarrow 2\text{H}_2\text{O}(\text{l}) + \text{O}_2(\text{g})$ under conditions where one mole of gas occupies 24 dm^3 , 100 cm^3 of *XM* solution of H_2O_2 produces 3 dm^3 of O_2 . Thus, *X* is :
 a) 2.5 b) 1 c) 0.5 d) 0.25
339. CuSO_4 and KI on mixing gives :
 a) $\text{CuI}_2 + \text{K}_2\text{SO}_4$ b) $\text{Cu}_2\text{I}_2 + \text{K}_2\text{SO}_4$ c) $\text{Cu}_2\text{I}_2 + \text{K}_2\text{SO}_4 + \text{I}_2$ d) $\text{CuI}_2 + \text{K}_2\text{SO}_4 + \text{I}_2$
340. Which metal exhibits more than one oxidation states?
 a) Na b) Mg c) Al d) Fe
341. Which of the following oxidation state is the most common among the lanthanoides :
 a) 4 b) 2 c) 5 d) 3
342. 13.5 g aluminium changes to Al^{3+} in solution by losing :
 a) 18×10^{23} electrons
 b) 6.023×10^{23} electrons
 c) 3.01×10^{23} electrons
 d) 9×10^{23} electrons
343. In CH_2Cl_2 , the oxidation number of C is :
 a) -4 b) +2 c) Zero d) +4
344. In the compounds KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$, the highest oxidation state is of the element
 a) Mn b) K c) O d) Cr
345. The oxidation state of nitrogen varies from :
 a) -3 to +5 b) 0 to +5 c) -3 to 1 d) +3 to +5
346. The oxidation state of hydrogen in CaH_2 is :
 a) +1 b) -1 c) Zero d) +2
347. The most common oxidation state of an element is -2. The number of electrons present in its outermost shell is :
 a) 2 b) 4 c) 6 d) 8
348. A good indicator must possess the following characteristics :
 a) The colour change should be sharp
 b) The colour change should be clear
 c) It must be sensitive to the equivalent point
 d) All of the above
349. The oxidation number of Xe in XeF_4 and XeO_2 is
 a) +6 b) +4 c) +1 d) +3
350. The oxidation number of arsenic in arsenate is :

368. The oxidation state of chlorine is highest in the compound :
 a) Cl_2 b) HCl c) Cl_2O d) Cl_2O_7
369. How many gram of KMnO_4 are contained in 4 litre of 0.05 N solution? The KMnO_4 is to be used as an oxidant in acidic medium :
 a) 1.58 g b) 15.8 g c) 6.32 g d) 31.6 g
370. The reaction; $\text{H}_2\text{S} + \text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{S}$ shows :
 a) Acidic nature of H_2O_2
 b) Alkaline nature of H_2O_2
 c) Oxidising action of H_2O_2
 d) Reducing action of H_2O_2
371. For redox reaction,
 $\text{MnO}_4^- + \text{C}_2\text{O}_4^{2-} + \text{H}^+ \rightarrow \text{Mn}^{2+} + \text{CO}_2 + \text{H}_2\text{O}$
 coefficient of reactants in balanced states are
 MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
 a) 2 5 16 b) 16 5 2
 c) 5 16 2 d) 2 16 5
372. Chlorine has +1 oxidation state in :
 a) HCl b) HClO_3 c) Cl_2O d) ICl_3
373. Which statement is incorrect?
 a) Oxidation of a substance is followed by reduction of another
 b) Reduction of a substance is followed by oxidation of another
 c) Oxidation and reduction are complementary reactions
 d) It is not necessary that both oxidation and reduction should take place in the same reaction
374. In the standardization of $\text{Na}_2\text{S}_2\text{O}_3$ using $\text{K}_2\text{Cr}_2\text{O}_7$ by iodometry, the equivalent weight of $\text{K}_2\text{Cr}_2\text{O}_7$ is :
 a) (molecular weight)/2
 b) (molecular weight)/6
 c) (molecular weight)/3
 d) Same as molecular weight
375. When SO_2 is passed in a solution of potassium iodate, the oxidation state of iodine changes from :
 a) +5 to 0 b) +5 to -1 c) -5 to 0 d) -7 to -1
376. The halogen that shows same oxidation state in all its compounds with other elements is:
 a) I_2 b) F_2 c) Cl_2 d) Br_2
377. The reaction,
 $\text{P}_4 + 3\text{NaOH} + 3\text{H}_2\text{O} \rightarrow 3\text{NaH}_2\text{PO}_2 + \text{PH}_3$
 is an example of
 a) Disproportionation reaction b) Neutralisation reaction
 c) Double-decomposition reaction d) Pyrolytic reaction
378. Titrations in which I_2 solution is used as intermediate are known astitrations.
 a) Iodometric b) Iodimetric c) Acidimetric d) alkalimetric
379. In the reaction, $\text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ + 6\text{I}^- \rightarrow 2\text{Cr}^{3+} + 7\text{H}_2\text{O} + 3\text{I}_2$, which element is reduced?
 a) I b) O c) H d) Cr
380. Carbon reacts with oxygen to form two oxides, CO and CO_2 . This is because :
 a) Carbon has two crystalline forms
 b) Carbon has two oxidation states
 c) Oxygen donates as well as accept electrons
 d) Oxygen has a strong affinity for carbon
381. How many milliliter of 0.5 N SnCl_2 solution will reduce 600 mL of 0.1 N HgCl_2 to Hg_2Cl_2 ?
 a) 120 mL b) 60 mL c) 30 mL d) 240 mL
382. What weight of FeSO_4 (mol. wt. =152) will be oxidised by 200 mL of normal KMnO_4 solution in acidic solution?

- a) 30.4 g b) 60.8 g c) 121.6 g d) 15.8 g
383. How many milligram of iron (Fe^{2+}) are equal to 1 mL of 0.1055 N $\text{K}_2\text{Cr}_2\text{O}_7$ equivalent?
 a) 5.9 mg b) 0.59 mg c) 59 mg d) 59×10^{-3} mg
384. Number of moles of MnO_4^- required to oxidise one mole of ferrous oxalate completely in acidic medium will be :
 a) 0.4 mole b) 7.5 mole c) 0.2 mole d) 0.6 mole
385. A, B and C are three elements forming a part of compound in oxidation states of +2, +5 and -2 respectively. What could be the compound?
 a) $A_2(BC)_2$ b) $A_2(BC_4)_3$ c) $A_3(BC_4)_2$ d) ABC
386. In an oxidation process for a cell $M_1 \rightarrow M_1^{n+} + ne$, the other metal (M_2) being univalent showing reduction takes up theelectrons to complete redox reaction.
 a) $(n - 1)$ b) 1 c) n d) 2
387. In which of the following reactions, chlorine acts as an oxidising agent?
 (i) $\text{CH}_3\text{CH}_2\text{OH} + \text{Cl}_2 \rightarrow \text{CH}_3\text{CHO} + \text{HCl}$
 (ii) $\text{CH}_3\text{CHO} + \text{Cl}_2 \rightarrow \text{CCl}_3\text{CHO} + \text{HCl}$
 (iii) $\text{CH}_4 + \text{Cl}_2 \rightarrow \text{CH}_3\text{Cl} + \text{HCl}$
 The correct answer is
 a) (i) only
 b) (ii) only
 c) (i) and (iii)
 d) (i),(ii) and (iii)
388. During a redox change, the oxidant $\text{K}_2\text{Cr}_2\text{O}_7$ is always reduced to :
 a) Cr^{5+} b) Cr^{4+} c) Cr^{3+} d) Cr^{2+}
389. When potassium permanganate is titrated against ferrous ammonium sulphate, the equivalent weight of potassium permanganate is :
 a) Molecular weight/10 b) Molecular weight/5 c) Molecular weight/2 d) Molecular weight
390. Which conversion is an oxidation?
 a) $\text{SO}_4^{2-} \rightarrow \text{SO}_3^{2-}$ b) $\text{Cu}^{2+} \rightarrow \text{Cu}$ c) $\text{H}^+ \rightarrow \text{H}$ d) $\text{H}^- \rightarrow \text{H}$
391. In which case +1 oxidation state is stable than +3?
 a) Ga b) Al c) Tl d) B
392. In the reduction of dichromate by Fe(II), the number of electrons involved per chromium atom is :
 a) 3 b) 1 c) 2 d) 4
393. When $\text{K}_2\text{Cr}_2\text{O}_7$ is converted into K_2CrO_4 , the change in oxidation number of chromium is
 a) 0 b) 5 c) 7 d) 9
394. Which of the following acts as both an oxidizing as well as reducing agent?
 a) HNO_3 b) HNO_2 c) HI d) H_2SO_4
395. In which of the following compounds, nitrogen exhibits highest oxidation state?
 a) N_3H b) NH_2OH c) N_2H_4 d) NH_3
396. 1 mole of MnO_4^{2-} in neutral aqueous medium disproportionates to :
 a) $\frac{2}{3}$ mole of MnO_4^- and $\frac{1}{3}$ mole of MnO_2
 b) $\frac{1}{3}$ mole of MnO_4^- and $\frac{2}{3}$ mole of MnO_2
 c) $\frac{1}{3}$ mole of Mn_2O_7 and $\frac{1}{3}$ mole of MnO_2
 d) $\frac{2}{3}$ mole of Mn_2O_7 and $\frac{1}{3}$ mole of MnO_2
397. Which one of the compound does not decolourised an acidified solution of KMnO_4 ?
 a) SO_2 b) FeCl_3 c) H_2O_2 d) FeSO_4
398. When one mole of KMnO_4 reacts with HCl, the volume of chlorine liberated at NTP will be:
 a) 11.2 litre b) 22.4 litre c) 44.8 litre d) 56.0 litre
399. What would happen when a small quantity of H_2O_2 is added to a solution of FeSO_4 ?

- a) Colour disappears
 b) H_2 is evolved
 c) An electron is added to Fe^{2+}
 d) An electron is lost by Fe^{2+}
400. The oxidation state of I in IPO_4 is
 a) +1 b) +3 c) +5 d) +7
401. The number of moles of $KMnO_4$ reduced by one mole of KI in alkaline medium is
 a) 1 b) 5 c) $\frac{1}{2}$ d) $\frac{1}{5}$
402. A 0.50 M solution of KI reacts with excess of H_2SO_4 and KIO_3 solutions according to the equation, $6H^+ + 5I^- + IO_3^- \rightarrow 3I_2 + 3H_2O$. Which of the following statements is true?
 a) 200 mL of the KI solution reacts with 0.10 mole KIO_3 .
 b) 100 mL of the KI solution reacts with 0.060 M of H_2SO_4 .
 c) 0.5 litre of the KI solution produces 0.15 mole of I_2
 d) None of the above
403. Oxidation number of chromium in $K_2Cr_2O_7$ is :
 a) +2 b) +3 c) +6 d) -4
404. A standard solution is one whose :
 a) Concentration is 1 M
 b) Concentration is unknown
 c) Concentration is known
 d) None of the above
405. In the reaction, $SO_2 + 2H_2S \rightarrow 3S + 2H_2O$, the substance oxidised is
 a) H_2S b) SO_2 c) S d) H_2O
406. Oxidation number of P in $HP_2O_7^-$ ion is
 a) +5 b) +6 c) +7 d) +3
407. The oxidation number that iron does not exhibit in its common compounds or in its elemental state is :
 a) Zero b) +1 c) +2 d) +3
408. Oxidation number of Cl in $NOClO_4$ is :
 a) +7 b) -7 c) +5 d) -5
409. In which reaction is hydrogen acting as an oxidising agent?
 a) With iodine to give hydrogen iodide
 b) With lithium to give lithium hydride
 c) With nitrogen to give ammonia
 d) With sulphur to give hydrogen sulphide
410. In presence of moisture SO_2 can :
 a) Gain electrons
 b) Lose electrons
 c) Act as oxidising agent
 d) Does not act as reducing agent
411. The oxidation number of Mn in MnO_2 is :
 a) +4 b) +6 c) +2 d) -4
412. Which is not correct in case of Mohr's salt?
 a) It decolourises $KMnO_4$
 b) It is primary standard
 c) It is a double salt
 d) Oxidation state of Fe is +3 in the salt
413. In the reduction of dichromate by Fe (II), the number of electrons involved per chromium atom is :
 a) 3 b) 1 c) 2 d) 4
414. Which of the following is a redox reaction?
 a) $NaCl + KNO_3 \rightarrow NaNO_3 + KCl$ b) $CaC_2O_4 + 2HCl \rightarrow CaCl_2 + H_2C_2O_4$

- c) $\text{Ca(OH)}_2 + 2\text{NH}_4\text{Cl} \rightarrow \text{CaCl}_2 + 2\text{NH}_3 + 2\text{H}_2\text{O}$ d) $2\text{K}[\text{Ag}(\text{CN})_2] + \text{Zn} \rightarrow 2\text{Ag} + \text{K}_2[\text{Zn}(\text{CN})_4]$
415. What volume of 2N $\text{K}_2\text{Cr}_2\text{O}_7$ solution is required to oxidise 0.81 g of H_2S in acidic medium?
 a) 47.8 mL b) 23.8 mL c) 40 mL d) 72 mL
416. Oxidation number of As atom in H_3AsO_4 is :
 a) +5 b) +6 c) +4 d) -3
417. In the following change, $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$. If the atomic weight of iron is 56, then its equivalent weight will be :
 a) 42 b) 21 c) 63 d) 84
418. In permonosulphuric acid (H_2SO_5), the oxidation number of sulphur is
 a) +8 b) +4 c) +5 d) +6
419. The reaction,
 $\text{Ag}^{2+}(\text{aq}) + \text{Ag}(\text{s}) \rightleftharpoons 2\text{Ag}^+(\text{aq})$
 is an example of
 a) Reduction b) Oxidation c) Comproportionation d) Disproportionation
420. 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) Oxidises oxalic acid to carbon dioxide and water
 b) Gets oxidized by oxalic acid to chlorine
 c) Furnishes H^+ ions in addition to those from oxalic acid
 d) Reduces permanganate to Mn^{2+}
421. Which is not a redox change?
 a) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
 b) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
 c) $\text{Na} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \frac{1}{2}\text{H}_2$
 d) $\text{MnCl}_3 \rightarrow \text{MnCl}_2 + \frac{1}{2}\text{Cl}_2$
422. Sulphurous acid can be used as :
 a) Oxidising agent b) Reducing agent c) Bleaching agent d) All of these