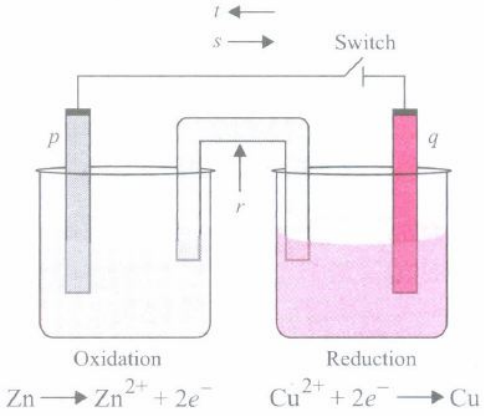
RAVI MATHS TUITION CENTRE , WHATSAPP - 8056206308

Time : 125 Mins **CHEMISTRY TEST 29 REDOX REACTION 1** **Marks : 293**

1. Arrange the oxides of nitrogen in increasing order of oxidation state of N from + 1 to +5.
   a) $N_2O < N_2O_3 < NO_2 < N_2O_5 < NO$ b) $N_2O < NO < N_2O_3 < NO_2 < N_2O_5$ c) $N_2O_52 < N_2O_3\ 2O$
   d) $NO_2O_2 < N_2O_3\ 2O_5$
2. The following redox reaction is balanced by which set of coefficients?
   $aZn + bNO_3^- + cH^+ \rightarrow dNH_4^+ + eH_2O + fZn^{2+}$
   a) 1 1 10 1 3 1 b) 2 2 10 2 3 2 c) 4 2 10 1 3 4 d) 4 1 10 1 3 4
3. Which of the following is decomposition reaction?
   a) $2HgO \rightarrow 2Hg + O_2$ b) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ c) $S + O_2 \rightarrow SO_2$ d) $Cl_2 + 2KBr \rightarrow 2KCl + Br_2$
4. The oxidation number of phosphorus in pyrophosphoric acid is:
   a) +3 b) +1 c) +4 d) +5
5. When Cl_2 reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from:
   a) Zero to + 1 and Zero to - 5 b) Zero to -1 and Zero to +5 c) Zero to -1 and Zero to +3
   d) Zero to + 1 and Zero to -3
6. All elements commonly exhibit an oxidation state of
   a) +1 b) -1 c) zero d) +2
7. Which of the following chemical reactions depicts the oxidising behaviour of H_2SO_4?
   a) $2PCl_5 + H_2SO_4 \rightarrow 2POCl_3 + 2HCl + SO_2Cl_2$ b) $2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$
   c) $NaCl + H_2SO_4 \rightarrow NaHSO_4 + HCl$ d) $2HI + H_2SO_4 \rightarrow I_2 + SO_2 + 2H_2O$
8. Which of the following is a redox reaction?
   a) Reaction of H_2SO_4 with NaOH b) In atmosphere, formation of O_3 from O_2 by lightening
   c) Formation of oxides of nitrogen from nitrogen and oxygen by lightening d) Evaporation of H_2O
9. The element that always exhibits a negative oxidation state in its compounds is
   a) Nitrogen b) Oxygen c) Fluorine d) Chlorine
10. A mixture of potassium chlorate, oxalic acid and sulpluric acid is heated. During the reaction which element undergoes maximum change in the oxidation number?
    a) S b) H c) CL d) C
11. Which of the following involves a redox reaction?
    a) Reaction of H_2SO_4 with NaOH b) Production of ozone from oxygen in the atmosphere by lightning
    c) Production of nitrogen oxides from nitrogen and oxygen in the atmosphere by lightning
    d) Evaporation of water
12. In the preparation of HNO_3, we get NO gas by catalytic oxidation of ammonia. The moles of NO produced by the oxidation of two moles of NH_3 will be:
    a) 2 b) 3 c) 4 d) 6
13. The reaction is balanced if, $5H_2O_2 + XClO_2 + 2OH^- \rightarrow XCl^- + YO_2 + 6H_2O$
    a) X = 5, Y = 2 b) X = 2, Y = 5 c) X = 4, Y = 10 d) X = 5, Y = 5
14. Which compound amongst the following has the highest oxidation number of Mn?
    a) $KMnO_4$ b) K_2MnO_4 c) MnO_2 d) Mn_2O_3
15. Co-ordination nurnber and oxidation state of Cr in $K_3[Cr(C_2O_4)_3]$ are, respectively
    a) 3 and + 3 b) 3 and 0 c) 6 and + 3 d) 4 and + 2
16. Which of the following reactions will not take place at cathode?
    a) $Ag^+ \rightarrow Ag - e^-$ b) $Fe^{2+} \rightarrow Fe^{3+} + e^-$ c) $Cu^{2+} + 2e^- \rightarrow Cu$ d) $Al^{3+} \rightarrow Al - 3e^-$

17. The standard E^0 values of few redox couples are Zn^{2+}/Zn = -0.76 V, Ag^+/Ag = + 0.80 V,Cu^{2+}/Cu = 0.34 V.Choose the correct option.
    a) Ag can oxidise Zn and Cu b) Ag can reduce Zn^{2+} and Cu^{2+}. c) Zn can reduce Ag^+ and Cu^{2+}.
    d) Cu can reduce Zn^{2+} and Ag^+.
18. What will be the products of electrolysis of $AgNO_3$ solution in water with platinum electrodes?
    a) Ag is liberated at cathode and Ag is deposited in anode
    b) Ag is liberated at cathode and O_2 is liberated at anode.
    c) Ag is liberated at anode and water is liberated at cathode.
    d) Ag is liberated at cathode and silver oxide is liberated at anode.
19. In the conversion of K_2Cr 207 to K_2CrO_4 the oxidation number of the following changes
    a) K b) Cr c) Oxygen d) None
20. In estimation of Fe^{2+} by $KMnO_4$, HNO_3 cannot be used in place of H_2SO_4 because
    a) HNO_3 oxidised Fe^{2+} b) HNO_3 reduces MnO_4^- c) HNO_3 reduces Fe^{2+} d) HNO_3 oxidised Mn^{2+}
21. What mass of HNO_3 is needed to convert 5 g of iodine into iodic acid according to the reaction? (at mass of I = 127 u)
    a) 12.4g b) 24.8g c) 0.24g d) 49.6g
22. The eq.wt of iodine in, $I_2 + 2S_2O_3^{2-} \rightarrow 2I^- + S_4O_6^{2-}$ is equal to:
    a) mol.wt b) mol.wt/2 c) mol. wt/4 d) none of these
23. Given below is the set up for Daniell cell. Label p, q, r, s, t in the given figure.



a)

p	q	r	s	t
Anode	Cathode	Salt bridge	Electron flow	Current flow

b)

p	q	r	s	t
Cathode	Anode	Salt bridge	Electron flow	Current flow

c)

p	q	r	s	t
Anode	Cathode	Salt bridge	Electron flow	Current flow

d)

p	q	r	s	t
Cathode	Anode	Salt bridge	Electron flow	Current flow

24. What are the oxidation states of phosphorus in the following compounds?
    H_3PO_2, H_3PO_4, $Mg_2P_2O_7$, PH_3, HPO_3
    a) +1, +3, +3, +3, +5 b) +3, +3, +5, +5, +5 c) +1, +2, +3, +5, +5 d) +1, +5, +5, -3, +5
25. The equivalent mass of iron in Fe_2O_3 would be
    a) 18.6 b) 28 c) 56 d) 11
26. The mass of 50% (mass/mass) solution of HCl required to react with 100g of $CaCO_3$ would be
    a) 73 g b) 100 g c) 146 g d) 200 g
27. Which of the following statements is not correct about the given reaction?
    $K_4[Fe(CN)_6] \xrightarrow{Oxidation} Fe^{3+} + CO_2 + NO_3^-$
    a) Fe is oxidised from 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.
28. Oxidation number of carbon in CH_2Cl_2 is
    a) 0 b) +1 c) +2 d) +4
29. Addition of iron or zinc to copper sulfate causes precipitation of copper owing to the _____
    a) reduction of Cu^{2+} b) reduction of SO_4^{2-} c) reduction of Zn d) hydrolysis of $CuSO_4$

30. Thiosulphate reacts differently with iodine and bromine in the reactions given below
$2S_2O_3^{2-} + I_2 \rightarrow S_4O_6^{2} + 2I^-$; $S_2O_3^{2-} + 2Br_2 + 5H_2O \rightarrow 2SO_4^{2-} + 2Br^- + 10H^+$
Which of the following statement justifies the above dual behaviour of thiosulphate?
a) Bromine is a stronger oxidant than iodine b) Bromine is a weaker oxidant than iodine
c) Thiosulphate undergoes oxidation by bromine and reduction by iodine in these reactions
d) Bromine undergoes oxidation and iodine undergoes reduction in these reactions

31. Which of the following is not a rule for calculating oxidation number?
a) For ions, oxidation number is equal to the charge on the ion.
b) The oxidation number of oxygen is -2 in all of its compounds.
c) The oxidation number of fluorine is -1 in all of its compounds.
d)
Oxidation number of hydrogen is + 1 except in binary hydrides of alkali metals and alkaline earth metals where it is -1.

32. Arrange the following in increasing order of oxidation state of Ni.
$K_2[Ni(CN)_4]$, $K_2[NiF_6]$,$Ni(CO)_4$
a) $Ni(CO)_4$, $K_2[Ni(CN)_4]$, $K_2[NiF_6]$ b) $K_2[Ni(CN)_4]$, $Ni(CO)_4$, $K_2[NiF_6]$ c) $Ni(CO)_4$, $K_2[NiF_6]$,$K_2[Ni(CN)_4]$
d) $K_2[NiF_6]$,$K_2[Ni(CN)_4]$, $Ni(CO)_4$

33. Which represents the disproportionation reaction?
a) $2Cu^+ \rightarrow Cu^{2+} + Cu$ b) $3I_2$ -7 $5I^- + I^{5+}$ c) $H_2O + Cl_2 \rightarrow Cl^- + ClO^- + 2H^+$ d) All of these

34. The oxidation number of Pt in $[Pt(C_2H_4)Cl_3]^-$ is:
a) +1 b) +2 c) +3 d) +4

35. Various oxidation states of few elements are mentioned. Which of the options is not correctly matched?
a) Phosphorus: +3 to +5 b) Nitrogen: +1 to +5 c) Iodine: -1 to +7 d) Chromium: -3 to +6

36. The pair of compounds that can exist together is :
a) $FeCl_3$, $SnCl_2$ b) $HgCl_2$, $SnCl_2$ c) $FeCl_2$, $SnCl_2$ d) $FeCl_3$, KI

37. Which of the following can act as oxidising as well as reducing agent?
a) H_2O_2 b) SO_3 c) H_2SO_4 d) HNO_3

38. What will be the order of decreasing reducing nature for the given metals?
a) Zn > Na > Fe > Mg > Cu > Ag b) Cu > Fe > Mg > Zn > Na > Ag c) Ag> Cu > Fe> Zn > Mg > Na
d) Na> Mg > Zn > Fe > Cu > Ag

39. Which species is acting as a reducing agent in the following reaction?
$14H^+ + Cr_2O_7^{2-} + 3Ni \longrightarrow 2Cr^{3+} + 7H_2O + 3Ni^{2+}$
a) $Cr_2O_7^{2-}$ b) Ni c) H^+ d) H_2O

40. Mark the correct statement from the following:
a) Copper metal can be oxidised by Zn^{2+} ions. b) Oxidation number of phosphorus in P_4 is 4.
c) An element in the highest oxidation state acts only as a reducing agent.
d) The element which shows highest oxidation number of +8 is Os in OsO_4.

41. Which of the following reactions does not involve the change in oxidation state of metal?
a) $VO^{-2} \rightarrow V_2O_3$ b) $K \rightarrow K^+$ c) $Cu^{2+} \rightarrow Cus$ d) $Cu^{2+} \rightarrow Cu$

42. In the reaction, $I_2 + 2KClO_3 \longrightarrow 2KIO_3 + Cl_2$
i) Iodine is oxidised ii) Chlorine is reduced iii) Iodine displaces chlorine iv) KCl03 is decomposed
The correct combination is
a) Only i & iv are correct b) Only iii & iv are correct c) i, ii, iii are correct d) All are correct

43. When $KMnO_4$ is reduced with oxalic acid in acidic solution, the oxidation number of Mn changes from
a) +2 to +7 b) +4 to +7 c) +7 to +2 d) +6 to +2

44. Which of the following statements is not true?
a) In a chemical reaction, oxidation is always accompanied by reduction.
b) When a negative ion changes to neutral species, the process is oxidation.
c) Oxidising agent has a tendency to lose electrons. d) Conversion of MnO_4^{2-} to MnO_4^- is oxidation.

45. Oxidation state of iron in $Fe(CO)_4$ is
a) +1 b) -1 c) +2 d) 0

46. Using the standard electrode potential, find out the pair between which redox reaction is not feasible.
E^0 values : $Fe^{3+}/Fe^{2+} = +0.77; I_2/I^- = +0.54; Cu^{2+}/Cu = +0.34; Ag^+/Ag = +0.80V$

a) Fe^{3+} and I^- b) Ag^+ and Cu c) Fe^{3+} and Cu d) Ag and Fe^{3+}

47. Which of the following shows highest oxidation number in combined state?
a) Os b) Ru c) Both (1) and (2) d) Fe

48. The oxidation states of metal in the compounds $Fe_{0.94}O$ and $[Cr(PPh_3)_3(CO)_3]$ respectively are
a) $\frac{200}{94}$, 0 b) 0, $\frac{200}{94}$ c) 2,1 d) 1, $\frac{200}{94}$

49. Loss of an electron is called:
a) oxidation b) reduction c) combustion d) neutralisation

50. Which of the following is not an example of disproportionation reaction?
a) $4ClO^-_3 \longrightarrow Cl^- + 3ClO^-_4$ b) $2H_2O_2 \longrightarrow 2H_2O + O_2$ c) $2NO_2 + 2OH^- \longrightarrow NO^-_2 + NO^-_3 + H_2O$
d) $TiCl_4 + 2Mg \longrightarrow Ti + 2MgCl_2$

51. The number of electrons involved in the conversion of MnO^-_4 to MnO_2 is
a) 3 b) 4 c) 1 d) 2

52. Mn^{3+} ions are unstable in solution and undergo disproportionation to give Mn^{2+}, MnO_2 and H^+ ions. What will be the balanced equation for the reaction?
a) $3Mn^{3+} + 4H_2O \rightarrow MnO_2 + Mn^{2+} + 8H^+$ b) $Mn^{3+} + 4H_2O \rightarrow MnO_2 + 4H^+$
c) $Mn + 2H_2O \rightarrow MnO_2 + 4H^+$ d) $2Mn^{3+} + 2H_2O \rightarrow MnO_2 + Mn^{2+} + 4H^+$

53. Identify the correct statement with respect to the following reaction,
$2K_2MnO_4 + Cl_2 \rightarrow 2KCl + 2KMnO_4$
a) Oxidation of potassium manganate is taking place. b) Reduction of potassium manganate is taking place.
c) Oxidation of Cl_2 is taking place. d) Cl_2 acts as reducing agent in the reaction.

54. Correct order of tendency to loss of electrons
a) Zn > Cu > Ag b) Zn < Cu < Ag c) Zn > Cu < Ag d) Cu> Zn > Ag

55. Which of the following halides is most easily oxidised?
a) F^- b) Br^- c) I^- d) Cl^-

56. Oxidation number of Fe in Fe_3O_4 are:
a) +2 and +3 b) +1 and +2 c) +1 and +3 d) None

57. Consider the change in oxidation state of Bromine corresponding to different emf values as shown in the diagram below:
$BrO^-_4 \xrightarrow{1.82} VBrO^-_3 \xrightarrow{1.5} VHBrO \xrightarrow{1.595} VBr_2 \xrightarrow{1.0652} VBr^-$ Then the species undergoing disproportionation is:
a) BrO_3^- b) BrO_4^- c) Br_2 d) HBrO

58. Which of the following are the common oxidising agents used in redox titrations?
a) $K_2Cr_2O_7$, $KMnO_4$, Iodine b) $FeSO_4$, $KMnO_4$, Sodium thiosulphate c) Oxalic acid, $KMnO_4$, $CuSO_4$
d) Mohr's salt, KI, Sodium sulphate

59. Why is HCl not used to make the medium acidic in oxidation reactions of $KMnO_4$ in an acidic medium?
a) Both HCl and $KMnO_4$ act as oxidising agents
b) $KMnO_4$ oxidises HCl into Cl_2 which is alsoan oxidising agent
c) $KMnO_4$ is a weaker oxidising agent than HCl d) $KMnO_4$ acts as a reducing agent in the presence of HCl

60. 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

61. What is the change in oxidation number of carbon in the following reaction?
$CH_4(g) + 4Cl_2(g) \rightarrow CCl_4(1) + 4HCl(g)$
a) 0 to -4 b) +4 to +4 c) 0 to +4 d) -4 to +4

62. Which of the following is not decomposition reactions?
a) $2HgO \rightarrow 2Hg + O_2$ b) $2H_2O \rightarrow 2H_2 + O_2$ c) $2KClO_3 \rightarrow 2KCl + 3O_2$
d) $CH_{4(g)} + 2O_{2(g)} \rightarrow CO_{2(g)} + 2H_2O_{(1)}$

63.

List-I	List-II
A)+3 Oxidation state	1) Nitrogen
B) + 1 Oxidation state	2) Nitrous oxide
C) 0 Oxidation state	3) Nitrate ion
D) + 5 Oxidation state	4) Hydroxylamine
	5) Nitrite ion

The correct match is

a)	b)	c)	d)
ABCD	**ABCD**	**ABCD**	**ABCD**
1 4 3 2	5 2 4 3	4 5 3 1	5 2 1 3

64. Equivalent mass of N_2 in the change $N_2 \rightarrow NH_3$ is
    a) 28/6 b) 28 c) 28/2 d) 28/3

65. Consider the following reaction:
    $HCHO + 2[Ag(NH_3)_2] + 30H^- \longrightarrow 2Ag + HCOO^- + 4NH_3 + 2H_2O$
    Which of the following statements regarding oxidation and reduction is correct?
    a) HCHO is oxidised to $HCOO^-$ and $[Ag(NH_3)_2]^+$ is reduced to Ag
    b) HCHO is reduced to $HCOO^-$ and $[Ag(NH_3)_2]^+$ is oxidised to Ag.
    c) $[Ag(NH_3)_2]^+$ is reduced to Ag while OH^- is oxidised to $HCOO^-$.
    d) $[Ag(NH_3)_2]^+$ is oxidised to NH3 while HCHO is reduced to H_2O.

66. The number of mole of oxalate ions oxidiscd by one mole of MnO_4^- is
    a) 5/2 b) 2/5 c) 1/5 d) 5

67. Which of the following is redox reaction?
    a) Evaporation of H_2O b) Both oxidation and reduction c) H_2SO_4 and NaOH
    d) In atmosphere O_3 from O_2 by lighting

68. The oxidation number of 'Mn' in potassium permanganate is
    a) +6 b) +7 c) +5 d) +8

69. Which of the following statements is correct regarding redox reactions?
    a) An increase in oxidation number of an element is called reduction.
    b) A decrease in oxidation number of an element is called oxidation.
    c) A reagent which lowers the oxidation number of an element in a given substance is reductant.
    d) A reagent which increases the oxidation number of an element in a given substance is reductant.

70. What is the oxidation number of carbon in C_3O_2 (carbon suboxide)?
    a) +4/3 b) +10/4 c) +2 d) +2/3

71. Fluorine is best oxidising agent because
    a) it is most electronegative. b) it has highest reduction potential. c) it has highest oxidation potential.
    d) it has smallest size.

72. In the redox reaction,
    $Pb_3O_4 + 8HCl \rightarrow 3PbCl_2 + Cl_2 + 4H_2O$
    a) three numbers of Pb^{2+} ions get oxidised to Pb^{4+} state
    b)
    one number Pb^{4+} ion gets reduced to Pb^{2+} and two numbers of Pb^{2+} ions remain unchanged in their oxidation state
    c)
    one number Pb^{2+} ion gets oxidised to Pb^{4+} and two numbers of Pb^{4+} ions remain unchanged in their oxidation states
    d) three numbers of Pb^{4+} ions get reduced to Pb^{2+} state.

73. How many electrons are transferred from reductant to oxidant in the following redox process?
    $As_2S_3 + HNO_3 \rightarrow H_3ASO_4 + H_2SO_4 + NO$
    a) 2 b) 4 c) 24 d) 84

74. Number of moles of MnO_4^- required to oxidize one mole of ferrous oxalate completely in acidic medium will be:
    a) 7.5 moles b) 0.2 moles c) 0.6 moles d) 0.4 moles

75. In the conversion of Br_2 to BrO_3^-, the oxidation state of bromine changes from
    a) 0 to + 5 b) -1 to + 5 c) 0 to - 3 d) + 2 to + 5

76. Hydroxyl amine reduces iron (III) according to following equation
    $NH_2OH + Fe_2(SO_4)_3 \rightarrow N_2(g) + H_2O + FeSO_4 + H_2SO_4$
    Which statement is correct
    a) n-factor for Hydroxyl amine is 2 b) equivalent weight of $Fe_2(SO_4)_3$ is M/2
    c) 6 meq of $Fe_2(SO_4)_3$ is contained in 3 millimoles of ferric sulphate d) all of these

77. In which of the following compounds oxidation state of chlorine has two different values?
    a) $CaCl_2$ b) NaCl c) $CaOCl_2$ d) CCl_4

78. In the reaction, $NaOH + H_2O \rightarrow NaOH + H2$

a) H- is oxidised b) Na^+ is reduced c) both NaH and H_2O are reduced d) None of the above

79. The most common oxidation state of an element is -2. The number of electrons present in its outermost 21 shell is
a) 2 b) 4 c) 6 d) 8

80. Given $E^0_{Ag^+/Ag} = +0.80V;\ E^0_{Cu^{2+}/Cu} = +0.34V;\ E^0_{Fe^{3+}/Fe^{2+}} = +0.76V;\ E^0_{Ce^{4+}/Ce^{3+}} = +1.60V$ Which of the following statements is not correct?
a) Fe^{3+} does not oxidise Ce^{3+}. b) Cu reduces Ag^+ to Ag. c) Ag will reduce Cu^{2+} to Cu.
d) Fe^{3+} reduces Cu^{2+} to Cu.

81. A compound contains atoms X, Y and Z. The oxidation number of X is +2, Y is +5 and Z is -2. The possible formula of the compound is
a) XYZ_2 b) $Y_2(XZ_3)_2$ c) $X_3(YZ_4)_2$ d) $X_3(Y_4Z)_2$

82. In a conjugate pair of reductant and oxidant, the reductant has:
a) higher ox. no. b) lower ox.no. c) same ox. no. d) either of these

83. 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

84. What is the equivalent mass of KIO_3 in the given reaction?
$KIO_3 + 2KI + 6HCl \rightarrow 31Cl + 3KCl + 3H_2O$
a) 214 b) 428 c) 107 d) 53.5

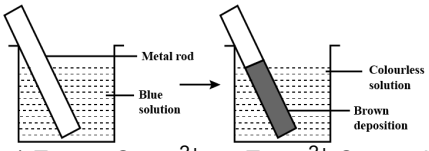
85. In which of the following compounds, an element exhibits two different oxidation states?
a) NH_2OH b) NH_4NO_3 c) N_2H_4 d) N_3H

86. $2CuI \rightarrow Cu + CuI_2$, the reaction is
a) disproportionation b) Neutralisation c) Oxidation d) Reduction

87. When SO_1 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

88. Which is not true about the oxidation state of the following elements?
a) Sulphur +6 to -2 b) Carbon +4 to-4 c) Chlorine +7 to -1 d) Nitrogen +3 to-1

89. Identify the redox reaction taking place in a beaker.



a) $Zn_{(s)} + Cu_{(aq)}^{2+} \longrightarrow Zn_{(aq)}^{2+} Cu_{(s)}$ b) $Cu_{(s)} + 2Ag_{(aq)}^{+} \longrightarrow Cu_{(aq)}^{2+} + 2Ag_{(s)}$
c) $Cu_{(s)} + Zn^{2+}_{(aq)} \longrightarrow Cu^{2+}_{(aq)} + Zn_{(s)}$ d) $2Ag_{(s)} + Cu_{(aq)}^{2+} \longrightarrow 2Ag^{+}_{(aq)} + Cu_{(s)}$

90. Consider the following reaction,

$$\begin{matrix} CHO \\ | \\ CHO \end{matrix} + OH^- \rightarrow \begin{matrix} COO^- \\ | \\ CH_2OH \end{matrix}$$

Select the incorrect statement.
a) It is not a disproportionation reaction. b) It is intramolecular redox reaction.
c) OH^- is a reducing as well as oxidising agent d) $\begin{matrix} CHO \\ | \\ CHO \end{matrix}$ is a reducing as well as oxidising agent.

91. In the following question, a statement of assertion is followed by a statement of reason. Mark the correct choice as :
Assertion: Inert electrolytes like KCl, KNO_3 are used in salt bridge.
Reason: Salt bridge provides an electric contact between the two solutions without allowing them to mix with each other.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false

92. Which substance is serving as a reducing agent in the following reaction?
$14H^+ + Cr_2O_7^{2-} + 3Ni \longrightarrow 2Cr^{3+} + 7H_2O + 3Ni^{2+}$?
a) H^+ b) $Cr_2O_7^{2-}$ c) H_2O d) Ni

93. In which of the following reactions, the underlined substance has been reduced?

a) $\underline{CO}+CuO \rightarrow CO_2+Cu$ b) $\underline{CuO}+2HCl \longrightarrow CuCl_2+H_2O$ c) $\underline{4H_2O}+3Fe \longrightarrow 4H_2+Fe_3O_4$
d) $\underline{C}+4HNO_3 \longrightarrow CO_2+2H_2O+4NO_2$

94. In the reaction:
$3Br_2 + 6CO^{2-}_3 + 3H_2O \longrightarrow 5Br^- + BrO^-_3 + 6HCO^-_3$
a) Bromine is reduced and carbonate ion is oxidised. b) Bromine undergoes disproportionation.
c) Bromine is reduced and water is oxidised d) Only water is oxidised to carbonic acid

95. Fill up the table from the given choice.

Element	Oxidation number
Oxygen	-2 in most compounds _(i)_ in H_2O_2 and_(ii)_ in OF_2
Halogen	-1 for _(iii)_ in all its compounds
Hydrogen	_(iv)_ in most of its compounds _(v)_ in binary metallic hydrides
Sulphur	_(vi)_ in all sulphides

a)

(i)	(ii)	(iii)	(iv)	(v)	(vi)
+1	+1	Cl	+1	-1	+2

b)

(i)	(ii)	(iii)	(iv)	(v)	(vi)
-1	+2	F	+1	-1	-2

c)

(i)	(ii)	(iii)	(iv)	(v)	(vi)
-1	+1	F	+1	+2	+2

d)

(i)	(ii)	(iii)	(iv)	(v)	(vi)
+1	+2	Cl	+1	+1	+6

96. $KMnO_4$ acts as an oxidising agent in alkaline medium, when alkaline $KMnO_4$ is treated with KI, iodine ion is oxidised to
a) I_2 b) IO^- c) IO^-_3 d) IO^-_4

97. Experimentally it was found that a metal oxide has formula $M_{0.98}O$. Metal M, is present as M^{2+} and M^{3+} in its oxide. Fraction of the metal which exits as M^{3+} would be
a) 6.05% b) 5.08% c) 7.01% d) 4.08%

98. Identify disproportionation reaction.
a) $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$ b) $CH_4 + 4Cl_2 \longrightarrow CCl_4 + 4HCl$ c) $2F_2 + 2OH^- \longrightarrow 2F^- + OF_2 + H_2O$
d) $2NO_2 + 2OH^- \longrightarrow NO^-_2 + NO^-_3 + H_2O$

99. The oxidation number of phosphorus in $Ba(H_2PO_2)_2$ is:
a) +3 b) +2 c) +1 d) -1

100. Arrange the following metals in which they displace each other from the solutions of their salts in decreasing order. Al, Cu, Fe, Mg and Zn.
$[E^0_{Al^{3+}/Al} = -1.66V,\ E^0_{Cu^{2+}/Cu} = +0.34V,\ E^0_{Fe^{2+}/Fe} = -0.44V,\ E^0_{Mg^{2+}/Mg} = -2.36V,\ and\ E^0_{Zn^{2+}/Zn} = -0.76V]$
a) Cu, Fe, Zn, Al, Mg b) Fe, Zn, Cu, Al, Mg c) Mg, Cu, Fe, Zn, Al d) Mg, Al, Zn, Fe, Cu

101. Which of the following is the strongest oxidizing agent?
a) F_2 b) Cl_2 c) Br_2 d) I_2

102. In which of the following compounds carbon is in highest oxidation state?
a) CH_3Cl b) CCl_4 c) $CHCl_3$ d) CH_2Cl_2

103. Which of the following acts as a self-indicator?
a) $K_2Cr_2O_7$ b) $KMnO_4$ c) Oxalic acid d) Iodine

104. A solution contains mixture of H_2SO_4, $H_2C_2O_4$. 20 ml of this solution requires 40 ml of M/10 NaOH for neutralization and 20 ml of N/10 $KMnO_4$ for oxidation. The molarity of $H_2C_2O_4$, H_2SO_4 are:
a) 0.1, 0.1 b) 0.1, 0.05 c) 0.05, 0.01 d) 0.05, 0.05

105. A compound contains atoms of three-element 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) $A(BC_3)_2$ b) $A_3(BC_4)_2$ c) $A_3(B_4C)_2$ d) ABC_2

106. How many moles of $KMnO_4$ are needed to oxidised a mixture of 1 mole of each $FeSO_4$ & FeC_2O_4 in acidic medium
a) 4/5 b) 5/4 c) 3/4 d) 5/3

107. Identify the compounds which are reduced and oxidised in the following reaction:
$3N_2H_4 + 2BrO^-_3 \longrightarrow 3N_2 + 2Br^- + 6H_2O$
a) N_2H_4 is oxidised and BrO^-_3 is reduced. b) BrO^-_3 is oxidised and N2H4is reduced.
c) BrO^-_3 is both reduced and oxidised. d) This is not a redox reaction.

108. In the reaction, $CH_3OH \rightarrow HCOOH$, the number of electrons that must be added to the right is:
a) 4 b) 3 c) 2 d) 1

109. In balancing the half-reaction, $S_2O_3^{2-} \rightarrow S(s)$, 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

110. Among the properties (i) reducing (ii) oxidising (iii) complexing the set of properties shown by CN^- ion towards metal species is :
a) i,ii,iii b) ii,iii c) iii,i d) i,ii

111. For the reaction: $I^- + ClO^-_3 + H_2SO_4 \rightarrow Cl^- + HSO^-_4 + I_2$
The incorrect statement in the balanced equation is
a) stoichiometric coefficient of HSO^-_4 is 6 b) iodide is oxidized c) sulphur is reduced
d) H_2O is one of the products.

112. Which type of redox reaction is shown by the following reaction?
0 +1-1 +1-1 0
$Cl_{2(g)} + 2KBr_{(aq)} \rightarrow 2KCl_{(aq)} + Br_{2(l)}$
a) Non-metal displacement reaction b) Disproportionation reaction
c) sodium loses electrons and is oxidised while water is reduced
d) water loses electrons and is oxidised to hydrogen.

113. For decolourisation of 1 mole of acidified $KMnO_4$ the moles of H_2O_2 required are
a) 1/2 b) 3/2 c) 5/2 d) 7/2

114. The charge on cobalt in $[Co(CN)_6]^{3-}$ is
a) +3 b) -3 c) +6 d) -6

115. Oxidation numbers of $\mathrm{P\ in\ PO_4^{3-}},\ \mathrm{of\ S\ in\ SO_4^{2-}}$ and that of $= \mathrm{Cr\ in\ Cr_2O_7^{2-}}$ are respectively :
a) +3,+6 and +5 b) +5, +3 and +6 c) -3 ,+6 and +6 d) +5, +6 and +6

116. Phosphorus on reaction with NaOH produces PH_3 and NaH_2PO_2. This reaction is an example of
a) oxidation b) reduction c) disproportionation d) displacement.

117. Which of the following is true about the given redox reaction?
$SnCl_2 + 2FeCl_3 \rightarrow SnCl_4 + 2FeCl_2$
a) $SnCl_2$ is oxidised and $FeCl_3$ acts as oxidising agent. b) $FeCl_3$ is oxidised and acts as oxidising agent.
c) $SnCl_2$ is reduced and acts as oxidising agent. d) $FeCl_3$ is oxidised and $SnCl_2$ acts as a oxidising agent.

118. Which of the following arrangements represent increasing oxidation number of the central atom?
a) $CrO^-_2, ClO^-_3, CrO^{2-}_4, MnO^-_4$ b) $ClO^-_3, CrO^{2-}_4, MnO^-_4, CrO^-_2$
c) $CrO^-_2, ClO^-_3, MnO^-_4, CrO^{2-}_4$ d) $CrO^{2-}_4, MnO^-_4, CrO^-_2, ClO^-_3,$

119. The equivalent weight of $Na_2S_2O_3$ as reductant in the reaction, $Na_2S_2O_3 + H_2O + Cl_2 \rightarrow Na_2SO_4 + 2HCl + S$ is:
[Given: Molecular weight of $Na_2S_2O_3$ = M]
a) $\frac{M}{1}$ b) $\frac{M}{2}$ c) $\frac{M}{6}$ d) $\frac{M}{8}$

120. Equivalent weight of $Ba(MnO_4)_2$ in acidic medium (M = molar mass)
a) M b) M/3 c) M/5 d) M/10

121. The oxidation state of molybdenum in its oxo complex species $[Mo_2O_4(C_2H_4)_2(H_2O_2)]^{2-}$ is
a) +2 b) +3 c) +4 d) +5

122. Oxidation number of Cr in CrO_5 is:
a) +5 b) -3 c) +6 d) +7

123. Equivalent weight of As_2O_3 in the following equation $As_2O_3 + 2I_2 + 2H_2O \rightarrow As_2O_5 + 4HI$ [arsenic at. wt =75]
a) 49.5 b) 156.6 c) 94 d) 75

124. In acidic medium, H_2O_2 changes $Cr_2O_7^{2-}$ to CrO_5, which has two (__O__O__) bonds. The oxidation state of Cr in CrO_5 is:
a) +5 b) +3 c) +6 d) -10

125. Oxidation number of P in PO_4^{3-}, of 5 in SO_4^{2-} and that of Cr in $Cr_2O_7^{2-}$ are respectively:
a) +3, +6 and +5 b) +5, +3 and +6 c) -3, +6 and +6 d) +5, +6 and +6