102. In the equation :

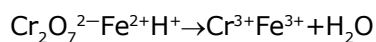$Cr_2O_7^{2-} Fe^{2+} H^+ \rightarrow Cr^{3+} Fe^{3+} + H_2O$

the coefficients of Fe^{2+} and H^+ are respectively

(A) 6, 7   (B) 6, 14   (C) 5, 7   (D) 5, 14

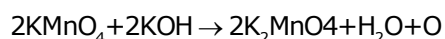**103.** Oxidation number of sulphur in H_2SO_5 is -

(A) +2   (B) +4   (C) +8   (D) +6

104. Which of the following process represents disproportionation ?

(A) $Cu + 4HNO_3 \rightarrow Cu(NO_3)_2 + 2NO_2 + 2H_2O$ (B) $3I_2 + 6OH^- \rightarrow IO_3^- + 5I^- + 3H_2O$

(C) $Cl_2 + I_2 \rightarrow 2ICl$ (D) $Zn + 2HCI \rightarrow ZnCl_2 + H_2$

105. In alkaline medium, $KMnO_4$, reacts as follows

$2KMnO_4 + 2KOH \rightarrow 2K_2MnO4 + H_2O + O$

Therefore, the equivalent mass of $KMnO_4$ will be

(A) 31.6   (B) 52.7   (C) 7.0   (D) 158.0

106. A meallic oxide contains 60% of the metal is

(A) 12   (B) 24   (C) 48   (D) 72

107. 30 mL of diabasic acid is neutralized by 15 mL of 0.2 N NaOH. The molarity of the acid is

(A) 0.05 M   (B) 0.2 M   (C) 0.3 M   (D) 0.4 M

108. 100 mL of a mixture of NaOH and Na_2SO_4 is neutralized by 10 mL of 0.5 M H_2SO_4 .The amound of NaOH in 100 mL solution is

(A) 0.2 g   (B) 0.4 g   (C) 0.6 g   (D) 0.8 g

109. A 1.0 g sample of H_2O_2 solution contains x% by mass and requires x mL of $KMnO_4$ in acidic solution for complete oxidation. The normality of $KMnO_4$ is -
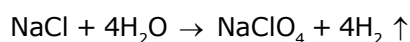
(A) 0.58   (B) 0.116   (C) 0.25   (D) 0.3

110. Equivalent mass of FeC_2O_4 in the reaction

$FeC_2O_4 \rightarrow Fe^{+3} CO_2$ is -
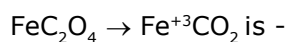
(A) M   (B) M/2   (C) M/3   (D) 2M/3

111. Electrolysis of hot aqueous solution of NaCl gives $NaClO_4$, i.e., sodium perchlorate,

$NaCl + 4H_2O \rightarrow NaClO_4 + 4H_2 \uparrow$

Now many faraday are required to obtain 1000 g of sodium perchlorate ?

(A) 65.3   (B) 40.3   (C) 18.3   (D) 31.6

112. Salt of A (atomic mass 15), B (atomic mass 27) and C (atomic mass 48) were electrolysed using same amount of charge. It was found that when 4.5 g of A was deposited, the mass of B and C deposited were 2.7 g and 9.6 g. The valencies of A, B and C were respectively :
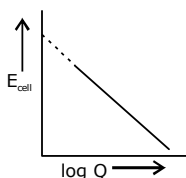
(A) 1, 3 and 2   (B) 3, 1 and 3   (C) 3, 1 and 2   (D) 2, 3 and 2

113. $2Ag^+(aq) + Cu(s) \rightleftharpoons Cu^{2+}(aq) + 2Ag(s)$
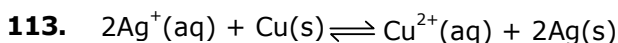
The standard potential E^o for this reaction is 0.46 V. Which change will increase the potential the most ?
(A) Doubling the $[Ag^+]$
(B) Halving the $[Cu^{2+}]$
(C) Doubling the size of the Cu(s) electrode
(D) Decreasing the size of the Ag electrode by one-half

114. The plot of cell potential (E_{cell}) against $\log_{10} Q$ may be given as :


Which of the following is /are correct about the plot ?

(A) Slope of line $= - \dfrac{0.059}{n}$ (B) Intercept $= E^o{}_{cell}$

(C) Slope of line $= E^o{}_{cell}$ (D) (A) & (B) Both

115. The relationship between osmotic pressure at 273 K when 10 g of glucose (P_1) ; 10 g of urea (P_2) and 10 g of sucrose (P_3) are dissolved in 250 mL of water is :
(A) $P_1 > P_2 > P_3$ (B) $P_3 > P_1 > P_2$ (C) $P_2 > P_1 > P_3$ (D) $P_2 > P_3 > P_1$

116. $FeCl_3$ on reaction with $K_4[Fe(CN)_6]$ in aqueous solution gives blue colour. These are separated by a semipermeable membrane AB as shown. Due to osmosis there is :
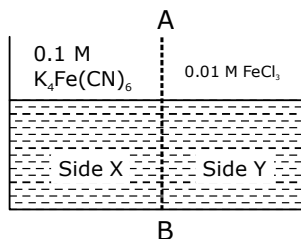
(A) blue colour formation in side X
(B) blue colour formation in side Y
(C) blue colour formation in both of the sides X and Y
(D) no blue colour formation

117. Solubility of oxygen gas in water follows Henry's law. When the solubility is plotted against partial pressure at a definite temperature we get following plots.
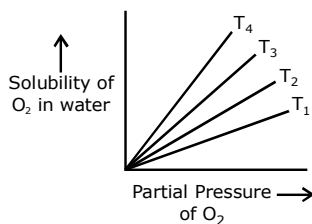
Which of the following sequence of temperatures is correct ?
(A) $T_1 = T_2 = T_3 = T_4$ (B) $T_1 > T_2 > T_3 > T_4$ (C) $T_1 < T_2 < T_3 < T_4$ (D) $T_1 > T_2 < T_3 > T_4$

118. The number of maganess ions in tetrahedral and octahedral sites, respectively in Mn_3O_4 are :

(A) one Mn^{2+} and two Mn^{3+} ions   (B) one Mn^{3+} and two Mn^{2+} ions

(C) two Mn^{3+} and one Mn^{2+} ions   (D) two Mn^{2+} and one Mn^{3+} ions

119. Xenon crystallizes in face centered cubic unit cell with edge length of 620 pm then radius of xenon atom is :

(A) 268 pm   (B) 219.20 pm   (C) 436.6 pm   (D) 526.8 pm

120.
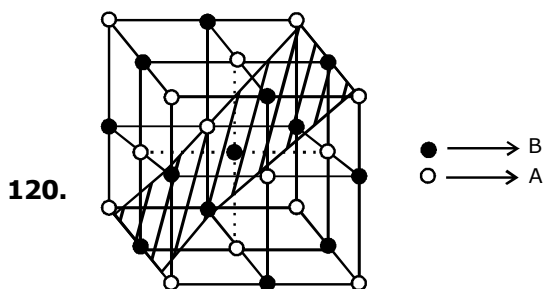
If all the atoms, on the shaded plane are removed then the molecular formula of the solid will be :

(A) $A_5 B_7$ (B) $A_7 B_5$ (C) AB   (D) $A_3 B_4$

121. The rate constant of a reaction depends on

(A) Temperature   (B) Initial concentrations of the reactants

(C) Extent of reaction   (D) None of these

122. In the following reaction, how is the rate of appearance of the underlined product related to the rate of disappearance of the underlined reactant

$BrO_3^-(aq) + 5Br^-(aq) + 6H+ (aq) \rightarrow 3Br_2(\ell) + 3H_2O(aq)$

(A) $-\dfrac{d[BrO_3^-]}{dt} = \dfrac{d[Br_2]}{dt}$ (B) $-\dfrac{1}{3}\dfrac{d[BrO_3^-]}{dt} = \dfrac{d[Br_2]}{dt}$

(C) $\dfrac{-d[BrO_3^-]}{dt} = \dfrac{1}{3}\dfrac{d[Br_2]}{dt}$ (D) None of these

123. Which of the following expressions is correct for zero order and first order respectively [where a is initial concentration] ?

(A) $t_{1/2} \propto a; t_{1/2} \propto \dfrac{1}{a}$ (B) $t_{1/2} \propto a; t_{1/2} \propto a^0$

(C) $t_{1/2} \propto a^0; t_{1/2} \propto a$ (D) $t_{1/2} \propto a; t_{1/2} \propto \dfrac{1}{a^2}$

124. Which one has highest co-agulation power to co-agulate the ferric hydroxide sol -

(A) NaCl   (B) $MgSO_4$ (C) $Ca_3 (PO_4)_2$ (D) all equal

125. Milk is -

(A) liquid in liquid   (B) solid in solid   (C) liquid in solid   (D) solid in liquid

126. When graph is plotted between $\log_{10} \dfrac{x}{m}$ & $\log_{10} P$ then value of intercept & slope will be

(A) n, log K   (B) log K $\dfrac{1}{n}$ (C) $\dfrac{1}{n}$, log K   (D) log K, n

127. 18.0 sec are required for the diffusion of x mol of O_2 through some porous partition. Another gas G requires 45.0 sec ofr the diffusion of x mol through the saem partition under similar conditions, the molar mass of G is

(A) $\left(\dfrac{45}{18}\right)^2 \times (32)$ (B) $\left(\dfrac{45 \times (32)}{18}\right)^2$ (C) $\left(\dfrac{18}{45}\right)^2 \times 32$ (D) $\left(\dfrac{18}{45}\right)^2 \times \dfrac{1}{32}$