Hydrogen ion concentration- *p*H scale and Buffer solution

141. The H^+ ion concentration is 1.0×10^{-6} *mole/litre* in a solution. Its *pH* value will be
(a) 12 (b) 6
(c) 18 (d) 24

142. The $pH$of a solution is the negative logarithm to the base 10 of its hydrogen ion concentration in
(a) Moles per litre
(b) Millimoles per litre
(c) Micromoles per litre
(d) Nanomoles per litre

143. When 10^{-8}mole of HCl is dissolved in one litre of water, the $pH$of the solution will be
(a) 8 (b) 7
(c) Above 8 (d) Below 7

144. The pH of the solution containing 10 $ml$of 0.1 *N* $NaOH$ and 10 ml of 0.05 *N* H_2SO_4 would be
(a) 0 (b) 1
(c) > 7 (d) 7

145. The pH of 0.001 molar solution of HCl will be
(a) 0.001 (b) 3
(c) 2 (d) 6

146. Which salt can be classified as an acid salt
(a) Na_2SO_4 (b) $BiOCl$
(c) $Pb(OH)Cl$ (d) Na_2HPO_4

147. Given a 0.1*M* solution of each of the following. Which solution has the lowest pH
(a) $NaHSO_4$ (b) NH_4Cl
(c) HCl (d) NH_3

148. Out of the following, which pair of solutions is not a buffer solution
(a) $NH_4Cl + NH_4OH$
(b) $NaCl + NaOH$
(c) $Na_2HPO_4 + Na_3PO_4$
(d) $CH_3COOH + CH_3COONa$

149. If the dissociation constant of an acid *HA* is 1×10^{-5}, the pH of a 0.1 molar solution of the acid will be approximately
(a) Three (b) Five
(c) One (d) Six

150. pH value of $N/10NaOH$ solution is
(a) 10 (b) 11
(c) 12 (d) 13

151. A solution of sodium borate has a pH of approximately
(a) < 7
(b) > 7
(c) = 7

(d) Between 4 to 5

152. If $pH$of $A, B, C$and $D$are 9.5, 2.5, 3.5 and 5.5 respectively, then strongest acid is

(a) A (b) C

(c) D (d) B

153. At $25°C$ the pH value of a solution is 6. The solution is

(a) Basic

(b) Acidic

(c) Neutral

(d) Both (b) and (c)

154. A certain buffer solution contains equal concentration of X^- and HX. The K_a for *HX* is 10^{-8}. The pH of the buffer is

(a) 3 (b) 8

(c) 11 (d) 14

155. The dissociation constant of *HCN* is 5×10^{-10}. The pH of the solution prepared by mixing 1.5 *mole* of *HCN* and 0.15 *moles* of *KCN* in water and making up the total volume to $0.5dm^3$ is

(a) 7.302 (b) 9.302

(c) 8.302 (d) 10.302

156. Which buffer solution out of the following will have $pH > 7$

(a) $CH_3COOH + CH_3COONa$

(b) $HCOOH + HCOOK$

(c) CH_3COONH_4

(d) $NH_4OH + NH_4Cl$

157. The pK_a of equimolecular sodium acetate and acetic acid mixture is 4.74. If pH is

(a) 7 (b) 9.2

(c) 4.74 (d) 14

158. pH of $NaCl$solution is

(a) 7 (b) Zero

(c) > 7 (d) < 7

159. A solution of sodium chloride in contact with atmosphere has a $pH$of about

(a) 3.5 (b) 5

(c) 7 (d) 1.4

160. Which would decrease the pH of $25cm^3$ of a $0.01M$ solution of hydrochloric acid

(a) The addition of $25cm^3$ $0.005M$ hydrochloric acid

(b) The addition of $25cm^3$ of $0.02M$ hydrochloric acid

(c) The addition of magnesium metal

(d) None of these