MODEL PAPER - 6

CHEMISTRY

121. 1 mole of water contains *(Some Basic concept of chemistry)*
   1) 6.023×10^{23} atoms   2) 6.023×10^{23} ,molecules   3) $3 \times 6.023 \times 10^{23}$ molecules   4) None of these

122. What is the velocity of electron present in first Bohr orbit of hydrogen atom? *(Structure of Atom)*
   1) 2.18×10^{5} m/s   2) 2.18×10^{6} m/s   3) 2.18×10^{-18} m/s   4) 2.18×10^{-9} m/s

123. According to Bohr's theory, the angular momentum of an electron in 5th orbit is *(Structure of Atom)*

   1) $\dfrac{10h}{\pi}$ 2) $\dfrac{25h}{\pi}$ 3) $\dfrac{1.5h}{\pi}$ 4) $\dfrac{2.5h}{\pi}$

124. An element has atomic number 79. Predict the group and period in which the element is placed.
   (Classification of elements)
   1) 2nd group, 7th period   2) 11th group, 6th period   3)13th group, 6th period   4) 12th group, 6th period

125. The correct sequence of bond length in single bond, double bond and triple bond of C is
   (Chemical Bonding & Molecular structure)
   1) $(C - C) < (C = C) < (C \equiv C)$ 2) $C \equiv C < C = C < C - C$
   3) $C - C < C = C < C \equiv C$ 4) $C = C < C \equiv C < C - C$

126. Arrange the following in increasing order of covalent character - $NaCl$, $MgCl_2$, $AlCl_3$. *(Chemical Bonding & Molecular structure)*
   1) $NaCl < MgCl_2 < AlCl_3$ 2) $MgCl_2 < NaCl < AlCl_3$ 3) $AlCl_3 < MgCl_2 < NaCl$ 4) $NaCl < AlCl_3 < MgCl_2$

127. What is the density of CO_2 at 27 ^{0}C and 2.5 atm pressure ? *(States of Matter)*
   1) 5.2 g L^{-1} 2) 6.2 g L^{-1} 3) 7.3 g L^{-1} 4) 4.46 g L^{-1}

128. Molecular mass of a gas is 78. Its density at 98 ^{0}C and 1 am will be *(States of Matter)*
   1) 200 g L^{-1} 2) 2.56 g L^{-1} 3) 256 g L^{-1} 4) 78 g L^{-1}

129. A reaction proceeds through two paths I and II to convert $X \rightarrow Z$.
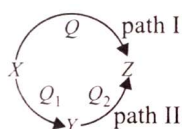
   What is the correct relationship between Q, Q_1 and Q_2 ? *(Thermodynamics)*
   1) $Q = Q_1 \times Q_2$ 2) $Q = Q_1 + Q_2$ 3) $Q = Q_2 - Q_1$ 4) $Q = Q_1 / Q_2$

130. For the reaction $a + b \rightleftharpoons c + d$, initially concentrations of a and b are equal and at equilibrium the concentration of d will be twice of that of a. What will be the equilibrium constant for the reaction ? *(Equilibrium)*
   1) 2   2) 9   3) 4   4) 3

131. Write the stoichiometric coefficient for the following reaction :

   $$xI_2 + yOH^- \rightarrow IO_3^- + zI^- + 3H_2O$$ *(Redox Reactions)*

   1) x- 6, y-3, z- 5   2) x- 3, y-2, z-3   3) x- 3, y-6, z- 5   4) x- 3, y-3, z- 3

132. Which compound amongst the following has the highest oxidation number of Mn? *(Redox Reactions)*
   1) $KMnO_4$ 2) K_2MnO_4 3) MnO_2 4) Mn_2O_3

133. Which property of Hydrogen is shown by the following reactions ? *(Hydrogen)*

   i) $Fe_3O_4 + 4H_2 \rightarrow 3Fe + 4H_2O$ ii) $CO + H_2 \xrightarrow[Cr_2O_3]{ZnO} CH_3OH$

   1) Reducing character   2) Oxidising character   3) Combustibility   4) High reactivity

134. Baking soda is *(S-Block elements)*
   1) $NaHCO_3$ 2) $NaHCO_3$, $6H_2O$ 3) Na_2CO_3 4) Na_2CO_3, $10H_2O$

135. $Na_2B_4O_7 + X \rightarrow H_3BO_3$. What is X in the reaction ? *(P-Block elements)*
   1) Aqueous solution of NaOH   2) Dilute nitric acid   3) Conc. H_2SO_4 or HCl   4) water

136. Which of the following compounds is formed in borax bead test ? *(P-Block elements)*
   1) Metaborate   2) Tetraborate   3) Triborate   4) Orthoborate

137. Which of the following represents 3 - methylpenta -1,3 - diene ? *(Organic chemistry-some Basic Principle)*
   1) $CH_2 = CH(CH_2)_2CH_3$ 2) $CH_2 = CHCH(CH_3)CH_2CH_3$
   3) $CH_3CH = C(CH_3)CH=CH_2$ 4) $CH_3CH = C(CH_3)_2$

138. Chlorination of methane does not occur in dark because *(Hydro Carbons)*
   1) Methane can form free radicals in presence of sunlight only
   2) To get chlorine free radicals from Cl_2 molecules energy is required. It cannot happen in dark
   3) Substitution reaction can take place only in sunlight and not in dark
   4) Termination step cannot take place in dark. It requires sunlight.

139. Presence of unsaturation in organic compounds can be tested with *(Hydro Carbons)*
   1) Fehling's reagent   2) Tollen's reagent   3) Baeyer's reagent   4) Fittig's reaction

140. Freon's are not recommended to be used in regfrigerators because they *(Environmental Chemistry)*
    1) Cause global warming   2) Cause acid rain
    3) Cause depletion of ozone layer   4) Cause very less cooling.

141. How many chloride ions are surrounding sodium ion in sodium chloride crystal ? *(Solid State)*
    1) 4   2) 8   3) 6   4) 12

142. The density of a solution prepared by dissolving 120 g of urea (mol. mass = 60 u) in 1000 g of water is 1.15 g/mL. The molarity of this solution is *(Solutions)*
    1) 1.78 M   2) 1.02 M   3) 2.05 M   4) 0.50 M

143. Limiting molar conductivity for some ions is given below (in S cm^2 mol^{-1}) :
    Na$^+$ - 50.1, Cl$^-$ - 763, H$^+$ - 349.6 CH$_3$COO$^-$ - 40.9, Ca^{2+} -119.0.
    What will be the limiting molar conductivities (Λ^0_m) of CaCl$_2$, CH$_3$COONa and NaCl respectively ? *(Electro Chemistry)*
    1) 97.65, 111.0 and 242.8 S cm^2 mol^{-1} 2) 195.3, 182.0 and 26.2 S cm^2 mol^{-1}
    3) 271.6, 91.0 and 126.4 S cm^2 mol^{-1} 4) 119.0, 1024.5 and 9.2 S cm^2 mol^{-1}

144. The equivalent conductivity of N/10 solution of acetic acid at 25 ^{0}C is 14.3 ohm^{-1} cm^2 equiv^{-1}. what will be the degree of dissociation of acetic acid ? ($\Lambda_{\infty CH_3COOH}$ =390.71 ohm^{-1} cm^2 equiv^{-1}) *(Electro Chemistry)*
    1) 3.66%   2) 3.9%   3) 2.12%   4) 0.008%

145. The rate constant of a reaction depends upon *(Chemical Kinetics)*
    1) Temperature of the reaction   2) extent of the reaction
    3) Initial concentration of the reactants   4) The time of completion of reaction.

146. The chemical reaction, $2O_3 \rightarrow 3O_2$ proceeds as
    $O_3 \rightleftharpoons O_2 + [O]$ (fast) $[O] + O_3 \rightarrow 2O_2$ (slow) The rate law expression will be *(Chemical Kinetics)*
    1) Rate = k[O] [O$_3$]   2) Rate = k [O$_3$]^2 [O$_2$]$^{-1}$ 3) Rate = k [O$_3$]^2 4) Rate = k [O$_2$] [O]

147. In Freundlich adsorption equation x/m = kp$^{1/n}$, the value of n is *(Surface Chemistry)*
    1) Alwyas grater than one
    2) Always smaller
    3) Always equal to one
    4) Greater than one at low temperature and smaller than one at high temperature.

148. Sulphide ore of zinc / copper is concentrated by *(Genral Principles and Process of Isolation of elements)*
    1) Floatation process   2) electromagnetic process   3) gravity separation   4) distillation.

149. How many P - O - P bonds appear in cyclic meta - phosphoric acid ? *(P-Block Elements)*
    1) Four   2) Three   3) Two   4) One

150. Which of the following is not correctly matched ? *(P-Block Elements)*
    1) PCl$_5$ - sp^3 d hybridisation   2) PCl$_3$ - sp^3 hybridisation
    3) PCl$_5$(solid) - [PtCl$_4$]$^+$ [PtCl$_6$]$^-$ 4) H$_3$PO$_3$ - tribasic

151. The magnetic moment of a divalent ion in aqueous solution with atomic number 25 is *(d- and -f-block elements)*
    1) 5.9 B.M   2) 2.9 B.M   3) 6.9 B.M   4) 9.9 B.M

152. Among the following which are ambidentate ligands ?
    (i) SCN$^-$ (ii) NO$^-_3$ (iii) NO$^-_2$ (iv) C$_2$O$^{2-}_4$ *(Co-ordination Compounds)*
    1) (i) and (iii)   2) (i) and (iv)   3) (ii) and (iii)   4) (ii) and (iv)

153. Which of the following reactions follows Markovnikov's rule ? *(HaloAlkanes & Halo Arenes)*
    1) C$_2$H$_4$ + HBr   2) C$_3$H$_6$ +Cl$_2$ 3) C$_3$H$_6$ +HBr   4) C$_3$H$_6$ + Br$_2$

154. An alcohol x when treated with hot conc. H$_2$SO$_4$ gave an alkene y with formula C$_4$H$_8$. This alkene on ozonlysis gives single product with molecular formula C$_2$H$_4$O. The alcohol is *(Alcohols, Phenols and ethers)*
    1) butan - 1-0l   2) butan - 2 - ol   3) 2 - methylpropan - 1 -ol   4) 2,2 - dimethylbutan - 1-ol

155. Which of the following compounds will undergo cannizzaro reaction ? *(Aldehydes, Ketones & Carboxylic acids)*
    1) CH$_3$CHO   2) CH$_3$COCH$_3$ 3) C$_6$H$_5$CHO   4) C$_6$H$_5$CH$_2$CHO

156. Match the column I with column II and mark the appropriate choice.
    column I   column II
    (A) Clemmensen reduction   (i) Conc, KOH
    (B) Rosenmund reduction   (ii) Zn /Hg + conc.HCl
    (C) Iodoform reaction   (iii) H$_2$ / Pd - BaSO$_4$
    (D) Cannizzaro reaction   (iv) NaOH + I$_2$ *(Aldehydes, Ketones & Carboxylic acids)*
    1) (A)→(i), (B)→(iii), (C)→(ii), (D)→(iv)
    2) (A)→(iii), (B)→(iv), (C)→(i), (D)→(ii)
    3) (A)→(ii), (B)→(iii), (C)→(iv), (D)→(i)
    4) (A)→(iv), (B)→(i), (C)→(ii), (D)→(iii)

157. Electrophilic substitution of aniline with bromine - water at room temperature gives *(Amines)*
    1) 2 - bromoaniline   2) 3 - bromoaniline   3) 2,4,6 - tribromoaniline   4) 3,5,6 - tribromoaniline

158. Denaturation of protein leads to loss of its biological activity by *(Bio Molecules)*
    1) Formation of amino acids
    2) Loss of primary structure
    3) Loss of both primary and secondary structure
    4) Loss of both secondary and tertiary structures.

159. Composition of Ziegler - Natta catalyst is *(Polymers)*
    1) $(Et_3)_3Al.TiCl_2$　　　2) $(Me)_3Al.TiCl_2$　　　3) $(Et)_3Al.TiCl_4$　　　4) $(Et)_3Al.PtCl_4$

160. Barbiturates acts as *(Chemistry in everyday life)*
    1) Hypnotic i.e., sleep producing agents　　　2) non-narcotic analgesics
    3) Activator of neurotransmitters　　　4) Antiallergic drugs.