MODEL PAPER -1
CHEMISTRY

121. A solution is prepared by adding 5 g of a solute 'X' to 45 g of solvent 'Y' what is the mass per cent of the solute 'X' ? *(Some Basic concept of chemistry)*
    1) 10%   2) 11.1%   3) 90%   4) 75%

122. How many orbitals and electrons are associated with n = 4 ? *(Structure of Atom)*
    1) 32, 64   2) 16, 32   3) 4, 16   4) 8, 16

123. An electron is in one of the 3d - orbitals. what are the possible values of n, ℓ and m for this electron *(Structure of Atom)*
    1) n = 3, ℓ =0, m_ℓ =0   2) n=3, ℓ=1, m_ℓ = -1, 0, +1
    3) n=3, ℓ=2, m_ℓ = -2,-1, 0, +1,+2   4) n=3, ℓ=3, m_ℓ = -3,-2-1, 0, +1,+2,+3

124. Which is the most electropositive element ? *(Classification of elements)*
    1) Na   2) Cu   3) Cs   4) Ca

125. According to molecular orbital theory, which of the following will not exist ? *(Chemical Bonding & Molecular structure)*
    1) H_2^+ 2) Be_2 3) B_2 4) C_2

126. Which of the following species has unpaired electrons *(Chemical Bonding & Molecular structure)*
    1) N_2 2) F_2 3) O_2^- 4) O_2^{2-}

127. What is the variation of Z with pressure ? *(States of Matter)*
    1) At very low pressures, all gases show Z=1   2) At high pressures, all gases show Z > 1
    3) At intermediate pressures, all gases show Z <1   4) All of the above.

128. The unit of a in van der waals equation, $\left(P + \dfrac{an^2}{V^2}\right)(V - nb) = nRT$ is *(States of Matter)*
    1) atm L^2 mol^{-2} 2) atm L mol^{-2} 3) atm L mol^{-1} 4) atm L^2 mol^{-1}

129. Two reactions are given below: $C_{(graphite)} + O_{2(g)} \rightarrow CO_{2(g)}; \Delta H = -393.7 kJ$; $C_{(diamond)} \rightarrow C_{(graphite)}; \Delta H = -2.1 kJ$ what quantity of diamond will give 800 kJ of heat on burning ? *(Thermodynamics)*
    1) 24.25 g   2) 15.24 g   3) 2 g   4) 12.12 g

130. The solubility product of $BaCl_2$ is 3.2 x 10^{-9}, what will be its solubility in mol L^{-1} ? *(Equilibrium)*
    1) 4 x 10^{-3} 2) 3.2 x 10^{-9} 3) 1 x 10^{-3} 4) 1 x 10^{-9}

131. Fluorine is best oxidising agent because *(Redox Reactions)*
    1) It is most electronegative   2) It has highest reduction potential
    3) It has highest oxidation potential   4) It has smallest size.

132. Which species is acting as a reducing agent in the following reaction ?
    $14H^+ + Cr_2O_7^{2-} + 3Ni \rightarrow 2Cr^{3+} + 7H_2O + 3Ni^{2+}$ *(Redox Reactions)*
    1) $Cr_2O_7^{2-}$ 2) Ni   3) H^+ 4) H_2O

133. Hydrolysis of $SiCl_4$ gives *(Hydrogen)*
    1) $Si(OH)_4$ 2) $SiOCl_2$ 3) SiO_2 4) H_2SiO_4

134. The difference of water molecules in gypsum and plaster of paris is *(S-Block elements)*
    1) $\dfrac{5}{2}$ 2) 2   3) $\dfrac{1}{2}$ 4) $1\dfrac{1}{2}$

135. Compete the following reactions :
    (i) $SiO_2 + 2NaOH \rightarrow X + H_2O$
    (ii) $SiO_2 + 4HF \rightarrow Y + 2H_2O$
    (iii) Si +2CH3Cl $\xrightarrow[570K]{Cu\ Powder}$ Z *(P-Block elements)*
    1) X- Na_2SiO_3, Y-SiF_4, Z-$(CH_3)_2SiCl_2$ 2) X-H_2SiO_3, Y-SiF_2, Z-CH_3SiCl_3
    3) X-Na_2SiO_3, Y-H_2SiO_3, Z-$(CH_3)_3SiCl$ 4) X-Na_2SiO_3, Y-H_2SiF_4, Z-$(CH_3)_2SiCl_2$

136. A type of zeolite used to convert alcohols directly into gasoline is *(P-Block elements)*
    1) Zeolite A   2) Zeolite L   3) Zeolite Beta   4) ZSM - 5

137. In Lassaigne's test for N, S and halogens, the organic compound is *(Organic chemistry-some Basic Principle)*
    1) Fused with sodium   2) dissolved with sodamide
    3) extracted with sodamide   4) Fused with calcium

138. What is the carbon - carbon bond length in benzene ? *(Hydro Carbons)*
    1) 1.20 ^{0}A and 1.31 ^{0}A   2)1.39 ^{0}A   3) 1.39 ^{0}A and 1.20 ^{0}A   4) 1.20 ^{0}A

139. The following reaction is known as $C_6H_6 + CH_3Cl \xrightarrow[(anhy.)]{AlCl_3} C_6H_5CH_3 + HCl$ *(Hydro Carbons)*
    1) Wurtz - Fitting reaction   2) Friedel - Crafts reaction
    3) Rosenmund reaction   4) Sandmeyer reaction

140. Eutrophication causes *(Environmental Chemistry)*
    1) Increase in nutrients   2) Increase in dissolved salts
    3) reduction in dissolved oxygen   4) Reduction in water pollution.

141. The density of a metal which crystallises in bcc lattice with unit cell edge length 300 pm and molar mass 50g mol^{-1} will be *(Solid State)*
    1) 10 g cm^{-3} 2) 14.2 g cm^{-3} 3) 6.15 g cm^{-3} 4) 9.32 g cm^{-3}

142. Which of the following will have same value of van't Hoff factor as that of $K_4[Fe(CN)_6]$? *(Solutions)*
    1) $Al_2(SO_4)_3$ 2) $AlCl_3$ 3) $Al(NO_3)_3$ 4) $Al(OH)_3$

143. The amount of chlorine evolved by passing 2A of current in an aqueous solution of NaCl for 30 minutes is *(Electro Chemistry)*
    1) 2.64 g   2) 1.32 g   3) 3.62 g   4) 4.22 g

144. If 54 g of silver is deposited during an electrolysis reaction, how much aluminium will be deposited by the same amount of electric current? *(Electro Chemistry)*
    1) 2.7 g   2) 4.5 g   3) 27 g   4) 5.4g

145. Rate of which reaction increases with tempeature? *(Chemical Kinetics)*
    1)Exothermic reaction   2) Endothermic reaction 3) Any of the above   4) None of the above

146. The activation energy in a chemical reaction is defined as *(Chemical Kinetics)*
    1) The difference in energies of reactants and products
    2) The sum of energies of reactants and products
    3) The difference in energy of intermediate complex with the average energy of reactants and products
    4) The difference in energy of intermeidate complex and the average energy of reactants

147. The separation of an emulsion into its constituent liquids is known as *(Surface Chemistry)*
    1) Emulsification   2) Protection of colloid 3) Coagulation   4) Demulsification

148. Which of the following slags is produced during extraction of iron? *(Genral Principles and Process of Isolation of elements)*
    1) $CaSiO_3$ 2) $FeSiO_3$ 3) $MgSiO_3$ 4) $ZnSiO_3$

149. Fluorine is the best oxidising agent because it has *(P-Block Elements)*
    1) highest electron affinity   2) highest reduction potential
    3) highest oxidation potential   4) lowest electron affinity

150. The correct order of acidity of oxoacids of halogens is *(P-Block Elements)*
    1) $HClO < HClO_2 < HClO_3 < HClO_4$ 2)$HClO_4 < HClO_3 < HClO_2 < HClO$
    3) $HClO < HClO_4 < HClO_3 < HClO_2$ 4) $HClO_4 < HClO_2 < HClO_3 < HClO$

151. The correct configuration of f-block elements is *(d- and -f-block elements)*
    1) $(n-2)f^{1-14} (n-1)d^{0-1}ns^2$ 2) $(n-1)f^{1-14}(n-1)d^{0-1}ns^2$
    3) $(n-3)f^{1-14} (n-2)d^{0-1} (n-1)s^2$ 4) $(n-2)f^{0-1}(n-1)d^{0-1} ns^2$

152. Which of the following complexes will have tetrahedral shape? *(Co-ordination Compounds)*
    1) $[PdCl_4]^{2-}$ 2) $[Pd(CN)_4]^{2-}$ 3) $[Ni(CN)_4]^{2-}$ 4) $[NiCl_4]^{2-}$

153. Elimination of bromine from 2-bromobutane results in the formation of *(HaloAlkanes & Halo Arenes)*
    1) Equimolar mixture of 1 and 2-butene   2) Predominantly 2-butene
    3) Predominantly 1-butene   4) Predominantly 2-butyne

154. Consider the following reaction Phenol $\xrightarrow{Zn\,dust}$ X $\xrightarrow[anhyd.\,AlCl_3]{CH_3Cl}$ Y $\xrightarrow{alkaline\,KMnO_4}$ Z . The product Z is *(Alcohols, Phenols and ethers)*
    1) Benzaldehyde   2) Benzoic acid   3) Benzene   4) Toluene

155. In a set of the given reactions, acetic acid yielded a product C
    $CH_3COOH + PCl_5 \rightarrow A \xrightarrow[Anh.\,AlCl_3]{C_6H_6} B \xrightarrow[ether]{C_2H_5MgBr} C$. Product C would be *(Aldehydes, Ketones & Carboxylic acids)*
    1) $CH_3CH(OH)C_2H_5$ 2) $CH_3COC_6H_5$ 3) $CH_3CH(OH)C_6H_5$ 4) $CH_3 - \overset{\overset{C_2H_5}{|}}{C}(OH)C_6H_5$

156. What happens when a carboxylic acid is treated with lithium aluminium hydride? *(Aldehydes, Ketones & Carboxylic acids)*
    1)Aldehyde is formed   2) Primary alcohol is formed 3) Ketone is formed   4) Grignard reagent is formed

157. $C_6H_6 \xrightarrow[H_2SO_4]{HNO_3} P \xrightarrow{Sn/HCl} Q \xrightarrow[HCl]{NaNO_2} P \xrightarrow[H_2O]{H_3PO_2} S$. The end product S in the given sequence of reactions is
    1) Benzoic acid   2) Benzene   3) Phenol   4) Chlorobenzene *(Amines)*

158. A nucleoside on hydrolysis gives *(Bio Molecules)*
    1)An aldopentose and a nitrogenous base   2) An aldopentose and phosphoric acid
    3)An aldopentose, anitrogenous base and phosphoric acid 4)A nitrogenous base and phosphoric acid

159. Low density polythene (LDP) is used in the insulation of electricity carrying wires and manufacture of flexible pipes and squeeze bottles because *(Polymers)*
    1) It is tough, hard and rigid
    2) It is chemically inert, tough, flexible and poor conductor of electricity
    3) It is very tough, good conductor of electricity and flexible
    4) It is chemically inert, very soft, water absorbent and poor conductor of heat

160. The use of aspartame is limited to cold foods and drinks because *(Chemistry in everyday life)*
    1) It is unstable to heat and decomposes at cooking temperature
    2) It is 500 times sweeter than cane sugar
    3) It becomes bitter at cooking temperature
    4) It reacts with the food at cooking temperature

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