MODEL PAPER - 4

CHEMISTRY

121. Total number of atoms present in 34 g of NH_3 is *(Some Basic concept of chemistry)*
1) 4×10^{23} 2) 4.8×10^{21} 3) 2×10^{23} 4) 48×10^{23}

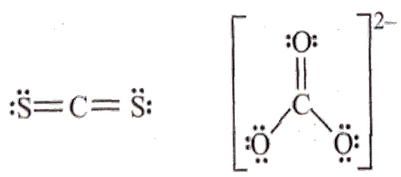
122. compare the energies of two radiations E_1 with wavelength 800 nm and E_2 with wavelength 400 nm. *(Structure of Atom)*
1) $E_1 = 2E_2$ 2) $E_1 = E_2$ 3) $E_2 = 2E_1$ 4) $E_2 = -\frac{1}{2}E_1$

123. The energy difference between the ground state of an atom and its excited state is 3×10^{-19} J. What is the wavelength of the photon required for this transition ? *(Structure of Atom)*
1) 6.6×10^{-34} m 2) 3×10^{-8} m 3) 1.8×10^{-7} m 4) 6.6×10^{-7} m

124. The Period to which an element belongs to in the long form of periodic table represents *(Classification of elements)*
1) Atomic mass 2) Atomic number
3) Principal quantum number 4) Azimuthal quantum number.

125. Two elements P and Q combine to form a compound. P has 2 and Q has 6 electrons in their outermost shell. What will be formula of the compound formed? *(Chemical Bonding & Molecular structure)*
1) PQ 2) P_2Q 3) P_2Q_3 4) PQ_2

126. What is the formal charge on carbon atom in the following two structures :



(Chemical Bonding & Molecular structure)

1) 0, -2 2) 0,0 3) +2, -2 4) +1, -1

127. The relations between various variables of gaseous substances are given in the table along with their formulae. Mark the incorrect relationship. *(States of Matter)*
1) Density and molar mass : $M = \frac{dRT}{P}$ 2) Universal gas constant, P, V, T : $R = \frac{PV}{nT}$
3) Volume and pressure : $V_2 = \frac{P_2V_1}{P_1}$ 4) Volume and temperature : $V_2 = \frac{V_1T_2}{T_1}$

128. An open flsk contains ait at 27 ^{0}C. At what temperature should it be heated so that 1/3 rd of air present in it goes out ? *(States of Matter)*
1) 177 ^{0}C 2) 100 ^{0}C 3) 300 ^{0}C 4) 150 ^{0}C

129. The work done during the expansion of a gas from 4 dm^3 to 6 dm^3 against a constant external pressure of 3 atm is (1 L atm = 101.32 J) *(Thermodynamics)*
1) - 6 J 2) -608 J 3) +304 J 4) - 304 J

130. For which of the following reactions, $K_p = K_c$? *(Equilibrium)*
1) $PCl_{3(g)} + Cl_{2(g)} \rightleftharpoons PCl_{5(g)}$ 2) $H_{2(g)} + Cl_{2(g)} \rightleftharpoons 2HCl_{(g)}$
3) $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ 4) $CaCO_{3(s)} \rightleftharpoons CaO_{(s)} + CO_{2(g)}$

131. Oxidation number of carbon in CH_2Cl_2 is oxidation state of iron in $Fe(CO)_4$ is *(Redox Reactions)*
1) +1 2) -1 3) +2 4) 0

132. The element that does not show positive oxidation state is *(Redox Reactions)*
1) O 2) N 3) Cl 4) F

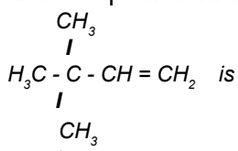
133. Which of the following metals does not liberate hydrogen from acids ? *(Hydrogen)*
1) Fe 2) Cu 3) Mg 4) Zn

134. In all oxides, peroxides and superoxides, the oxidation state of alkali metals is *(S-Block elements)*
1) +1 and -1 2) +1 and +2 3) +1 only 4) +1, -1 and +2

135. Aluminium oxide is not reduced by chemical reactions due to *(P-Block elements)*
1) Its hights stable nature 2) Its highly unstable nature 3) Its amphoteric nature 4) Its highly explosive nature

136. The shape and hybridisation of BF_3 and BH^-_4 respectively are *(P-Block elements)*
1) BF_3 - Trigonal, sp^2 hybridisation; BH_4^- - square planar, sp^3 hybridisation
2) BF_3 - Triangular, sp^3 hybridisation; BH_4^- - Hexagonal, sp^3d hybridisation
3) BF_3 - Trigonal, sp^2 hybridisation; BH_4^- -Tetrahedral , sp^3 hybridisation
3) BF_3 - Tetrahedral, sp^3 hybridisation; BH_4^- -Tetrahedral , sp^3 hybridisation

137. The IUPAC name of the compound having formula



is *(Organic chemistry-some Basic Principle)*

1) 3,3,3 - trimethylprop - 1 -ene 2) 1,1,1 - trimethylprop - 2 -ene
3) 3,3 - dimethylbut - 1 - ene 4) 2,2 - dimethylbut - 3- ene

138. Which of the following compounds will react with Na to form 4,5 - diethyloctane ? *(Hydro Carbons)*

1) $CH_3CH_2CH_2CH_2Br$ 2) $CH_3CH_2CH_2 - CH(CH_3) - CH_2CH_2Br$

3) $CH_3CH_2CH_2CH_2 - CH(Br) - CH_3$ 4) $CH_3CH_2CH_2 - CH(Br) - CH_2CH_3$

139. Which alkane is produced when sodium salt of butanoic acid is heated with soda lime? *(Hydro Carbons)*

1) CH_3CH_3 2) $CH_3CH_2CH_2CH_3$ 3) CH_4 4) $CH_3CH_2CH_3$

140. Which of the following is not regarded as a pollutant ? *(Environmental Chemistry)*

1) NO_2 2) CO_2 3) SO_2 4) CO

141. A crystal is formed by two elements X and Y in cubic structure. X atoms are at the corners of a cube while Y atoms are at the face centre. The formula of the compound will be *(Solid State)*

1) XY 2) XY_2 3) X_2Y_3 4) XY_3

142. The molality of 648 g of pure water is *(Solutions)*

1) 36m 2) 55.5m 3) 3.6m 4) 5.55m

143. The cell reaction of the galvanic cell $Cu_{(s)} \mid Cu^{2+}_{(aq)} \parallel Hg^{2+}_{(aq)} \mid Hg_{(\ell)}$ is *(Electro Chemistry)*

1) $Hg + Cu^{2+} \rightarrow Hg^{2+} + Cu$ 2) $Hg + Cu^{2+} \rightarrow Cu^{+} + Hg^{+}$
3) $Cu + Hg \rightarrow CuHg$ 4) $Cu + Hg^{2+} \rightarrow Cu^{2+} + Hg$

144. The standard reduction potential for the half-cell reaction, $Cl_2 + 2e^- \rightarrow 2Cl^-$ will be
($Pt^{+2} + 2Cl^- \rightarrow Pt + Cl_2$, $E^0_{cell} = -0.15$ V; $Pt^{2+} + 2e^- \rightarrow Pt$, $E^0 = 1.20$ V) *(Electro Chemistry)*

1) -1.35 V 2) +1.35 V 3) -1.05 V 4) +1.05 V

145. The rate of disappearance of SO_2 in the reaction $2SO_2 + O_2 \rightarrow 2SO_3$ is 1.28×10^{-5} mol s^{-1}. The rate of appearance of SO_3 is *(Chemical Kinetics)*

1) 0.64×10^{-5} mol s^{-1} 2) 0.32×10^{-5} mol s^{-1} 3) 2.56×10^{-5} mol s^{-1} 4) 1.28×10^{-5} mol s^{-1}

146. In a reaction $2X \rightarrow Y$, the concentration of X decreases from 3.0 moles/litre to 2.0 moles/litre in 5 minutes. The rate of reaction is *(Chemical Kinetics)*

1) 0.1 mol L^{-1} min^{-1} 2) 5 mol L^{-1} min^{-1} 3) 1 mol L^{-1} min^{-1} 4) 0.5 mol L^{-1} min^{-1}

147. Which of the following is a property of Physisorption? *(Surface Chemistry)*

1) High specificity 2) Irreversibility 3) Non-specificity 4) None of these

148. Which of the following is a halide ore? *(Genral Principles and Process of Isolation of elements)*

1) Cassiterite 2) Anglesite 3) Siderite 4) Carnallite

149. Which of the following compounds will not give ammonia on heating? *(P-Block Elements)*

1) $(NH_4)_2SO_4$ 2) $(NH_4)_2CO_3$ 3) NH_4NO_2 4) NH_4Cl

150. Which of the following oxides is anhydride of nitrous acid? *(P-Block Elements)*

1) N_2O_3 2) NO_2 3) NO 4) N_2O_4

151. Which of the following transition metal ions is colourless? *(d- and -f-block elements)*

1) V^{2+} 2) Cr^{3+} 3) Zn^{2+} 4) Ti^{3+}

152. A coordination compound $CrCl_3.4H_2O$ gives white precipitate of AgCl with $AgNO_3$. The molar conductance of the compound corresponds to two ions. The structural formula of the compound is *(Co-ordination Compounds)*

1) $[Cr(H_2O)_4Cl_3]$ 2) $[Cr(H_2O)_3Cl_3]H_2O$ 3) $[Cr(H_2O)_4Cl_2]Cl$ 4) $[Cr(H_2O)_4Cl]Cl_2$

153. The IUPAC name of $(CH_3)_2CH - CH_2 - CH_2Br$ is *(HaloAlkanes & Halo Arenes)*

1) 1-bromopentane 2) 1-bromo-3-methylbutane 3) 2-methyl-4-bromobutane 4) 2-methyl-3-bromopropane

154. A compound X with the molecular formula C_3H_8O can be oxidised to another compound Y whose molecular formula is $C_3H_6O_2$. The compound X may be *(Alcohols, Phenols and ethers)*

1) $CH_3CH_2OCH_3$ 2) CH_3CH_2CHO 3) $CH_3CH_2CH_2OH$ 4) $CH_3CHOHCH_3$

155. Propanone can be prepared from ethyne by *(Aldehydes, Ketones & Carboxylic acids)*

1) Passing a mixture of ethyne and steam over a catalyst, magnesium at 420^0C
2) Passing a mixture of ethyne and ethanol over a catalyst zinc chromite
3) Boiling ethyne with water and H_2SO_4
4) Treating ethyne with iodine and NaOH

156. The oxidation of toluene to benzaldehyde by chromyl chloride is called *(Aldehydes, Ketones & Carboxylic acids)*

1) Etard reaction 2) Riemer-Tiemann reaction 3) Wurtz reaction 4) Cannizzaro's reaction

157. Amine that cannot be prepared by Gabriel-Phthalimide synthesis is *(Amines)*

1) Aniline 2) benzyl amine 3) Methyl amine 4) iso-butylamine

158. The general formula of carbohydrates is *(Bio Molecules)*

1) $C_nH_{2n+1}O$ 2) $C_nH_{2n}O$ 3) $C_x(H_2O)_y$ 4) $C_n(H_2O)_{2n}$

159. Nylon 6, 6 is obtained by condensation polymerisation of *(Polymers)*
1) Adipic acid and ethylene glycol
2) Adipic acid and hexamethylenediamine
3) Terephthalic acid and ethylene glycol
4) Adipic acid and phenol

160. Antihistamines are not helpful *(Chemistry in everyday life)*
1) In curing nasal allergies
2) in treating rashes caused by itching
3) In bringing down acute fever
4) in vasodilation