

MODEL PAPER - 3
CHEMISTRY

121. The density of a gas is 1.78 g L^{-1} at STP. The weight of one mole of gas is *(Some Basic concept of chemistry)*
 1) 39.9 gr 2) 22.4 g 3) 3.56 g 4) 29 g
122. Which of the following species is isoelectronic with CO? *(Structure of Atom)*
 1) HF 2) N_2 3) N_2^+ 4) O_2^-
123. What will be the wavenumber of yellow radiation having wavelength 240 nm? *(Structure of Atom)*
 1) $1.724 \times 10^4 \text{ cm}^{-1}$ 2) $4.16 \times 10^6 \text{ m}^{-1}$ 3) $4 \times 10^{14} \text{ Hz}$ 4) $219.3 \times 10^3 \text{ cm}^{-1}$
124. What is the name and symbol of the element with atomic number 112? *(Classification of elements)*
 1) Ununbium Uub? 2) Unnilbium, Unb 3) Ununillum, Uun 4) Ununtrium, Uut
125. How many and what types of bonds are present in NH_4^+ ? *(Chemical Bonding & Molecular structure)*
 1) Four covalent bonds 2) Three covalent bonds and one ionic bond
 3) Four ionic bonds 4) Three covalent bonds and one coordinate bond
126. In which of the following molecules octet rule is not followed? *(Chemical Bonding & Molecular structure)*
 1) NH_3 b) CH_4 c) CO_2 d) NO
127. What is the effect on the pressure of a gas if its temperature is increased at constant volume? *(States of Matter)*
 1) The pressure of the gas increases 2) The pressure of the gas decreases
 3) The pressure of the gas remains same 4) The pressure of the gas becomes double.
128. A flask of capacity 2 L is heated from 35° C to 45° C . What volume of air will escape from the flask? *(States of Matter)*
 1) 10 mL 2) 20 mL 3) 60 mL 4) 50 mL
129. In an adiabatic expansion of ideal gas *(Thermodynamics)*
 1) $W = -\Delta E$ 2) $W = \Delta E$ 3) $\Delta E = 0$ 4) $W = 0$
130. For the following reactions : $\text{NO}_{(g)} + \text{O}_{3(g)} \rightleftharpoons \text{NO}_{2(g)} + \text{O}_{2(g)}$. The value of K_c is 8.2×10^4 . What will be the value of K_c for the reverse reaction? *(Equilibrium)*
 1) 8.2×10^4 2) $\frac{1}{8.2 \times 10^4}$ 3) $(8.2 \times 10^4)^2$ 4) $\sqrt{8.2 \times 10^4}$
131. Which type of redox reaction is shown by the following reaction?

$$\overset{0}{\text{Cl}}_{2(g)} + 2\overset{+1-1}{\text{KBr}}_{(aq)} \rightarrow 2\overset{+1-1}{\text{KCl}}_{(aq)} + \overset{0}{\text{Br}}_{2(l)}$$
 (Redox Reactions)
 1) Decomposition reaction 2) Metal displacement reaction
 3) Non-metal displacement reaction 4) Disproportionation reaction
132. What is the oxidation number of carbon in C_3O_2 (carbon suboxide)? *(Redox Reactions)*
 1) $+4/3$ 2) $+10/4$ 3) $+2$ 4) $+2/3$
133. A deuterium is *(Hydrogen)*
 1) an electron with a positive charge 2) a nucleus having two protons
 3) a nucleus containing a neutron and two protons 4) a nucleus containing a neutron and a proton
134. Which of the following alkali metals when burnt in air forms a mixture of oxide as well as nitride? *(S-Block elements)*
 1) K 2) Na 3) Li 4) Cs
135. Anhydrous AlCl_3 fumes in air. What is the reason for it? *(P-Block elements)*
 1) It is hygroscopic in nature.
 2) It gives out chlorine when exposed to air.
 3) It is hydrolysed in moist air giving out fumes of HCl.
 4) It loses water when exposed to moist air.
136. The decreasing order of power of boron halides to act as Lewis acids is *(P-Block elements)*
 1) $\text{BF}_3 > \text{BCl}_3 > \text{BBr}_3$ 2) $\text{BBr}_3 > \text{BCl}_3 > \text{BF}_3$ 3) $\text{BCl}_3 > \text{BF}_3 > \text{BBr}_3$ 4) $\text{BCl}_3 > \text{BBr}_3 > \text{BF}_3$
137. Which type of hybridisation of each carbon is there in the compound? $\text{CH}_3 - \text{CH} = \text{CH} - \text{CN}$ *(Organic chemistry-some Basic Principle)*
 1) $\text{sp}^3, \text{sp}^2, \text{sp}^2, \text{sp}$ 2) $\text{sp}^3, \text{sp}^2, \text{sp}^2, \text{sp}^3$ 3) $\text{sp}^3, \text{sp}^2, \text{sp}^3, \text{sp}^3$ 4) $\text{sp}^3, \text{sp}^2, \text{sp}, \text{sp}^3$
138. Which of the following compounds gives methane on reaction with water? *(Hydro Carbons)*
 1) CaC_2 2) B_4C 3) SiC 4) Al_4C_3
139. The number of chain isomers possible for hydrocarbon C_5H_{12} is *(Hydro Carbons)*
 1) 3 2) 5 3) 4 4) 6
140. Which of the following is a greenhouse gas? *(Environmental Chemistry)*
 1) SO_2 2) H_2S 3) CO_2 4) O_2
141. Which of the following primitive cells show the given parameters? $a \neq b \neq c, \alpha = \beta = \gamma = 90^\circ$ *(Solid State)*
 1) Cubic 2) Tetragonal 3) Orthorhombic 4) Hexagonal
142. What is the molarity of a solution containing 10 g of NaOH in 500 mL of solution? *(Solutions)*

- 1) 0.25 mol L⁻¹ 2) 0.75 mol L⁻¹ 3) 0.5 mol L⁻¹ 4) 1.25 mol L⁻¹
143. In the cell, Zn|Zn²⁺||Cu²⁺|Cu, the negative terminal is (Electro Chemistry)
 1) Cu 2) Cu²⁺ 3) Zn 4) Zn²⁺
144. Electrode potential data of few cells is given below. Based on the data, arrange the ions in increasing order of their reducing power.
 $\text{Fe}_{(\text{aq})}^{3+} + \text{e}^- \rightarrow \text{Fe}_{(\text{aq})}^{2+}; E^0 = +0.77 \text{ V}$
 $\text{Al}_{(\text{aq})}^{3+} + 3\text{e}^- \rightarrow \text{Al}_{(\text{s})}; E^0 = -1.66 \text{ V}$
 $\text{Br}_{2(\text{aq})} + 2\text{e}^- \rightarrow 2\text{Br}_{(\text{aq})}^-; E^0 = +1.09 \text{ V}$ (Electro Chemistry)
 1) Br < Fe²⁺ < Al 2) Fe²⁺ < Al < Br 3) Al < Br < Fe²⁺ 4) Al < Fe²⁺ < Br
145. For a reaction R → P, the concentration of a reactant changes from 0.05 M to 0.04 M in 30 minutes. What will be the average rate of reaction in minutes? (Chemical Kinetics)
 1) 4 × 10⁻⁴ M min⁻¹ 2) 8 × 10⁻⁴ M min⁻¹ 3) 3.3 × 10⁻⁴ M min⁻¹ 4) 2.2 × 10⁻⁴ M min⁻¹
146. For the reaction 4NH₃ + 5O₂ → 4NO + 6H₂O, If the rate of disappearance of NH₃ is 3.6 × 10⁻³ mol L⁻¹ s⁻¹, what is the rate of formation of H₂O? (Chemical Kinetics)
 1) 5.4 × 10⁻³ mol L⁻¹ s⁻¹ 2) 3.6 × 10⁻³ mol L⁻¹ s⁻¹
 3) 4 × 10⁻⁴ mol L⁻¹ s⁻¹ 4) 0.6 × 10⁻⁴ mol L⁻¹ s⁻¹
147. Which of the following is less than zero during adsorption? (Surface Chemistry)
 1) ΔG 2) ΔS 3) ΔH 4) All of these
148. Which of the following is not an ore of magnesium? (General Principles and Process of Isolation of elements)
 1) Carnallite 2) magnesite 3) Dolomite 4) Gypsum
149. Nitrogen shows different oxidation states ranging from (P-Block Elements)
 1) -3 to +5 2) -5 to +5 3) 0 to -5 4) -3 to +3
150. Which of the following species has the highest dipole moment? (P-Block Elements)
 1) SbH₃ 2) PH₃ 3) NH₃ 4) AsH₃
151. Fe³⁺ compounds are more stable than Fe²⁺ compounds because (d- and f-block elements)
 1) Fe³⁺ has smaller size than Fe²⁺ 2) Fe³⁺ has 3d⁵ configuration (half - filled)
 3) Fe³⁺ has higher oxidation state 4) Fe³⁺ is paramagnetic in nature
152. The number of ions given by [Pt (NH₃)₆]Cl₄ in aqueous solution will be (Co-ordination Compounds)
 1) Two 2) Three 3) Five 4) eleven
153. Which of the following is a primary halide? (HaloAlkanes & Halo Arenes)
 1) iso - Propyl iodide 2) sec- Butyl iodide 3) ter- Butyl bromide 4) neo - hexyl chloride
154. An alkene CH₃CH = CH₂ is treated with B₂H₆ in presence of H₂O₂. The final product formed is (Alcohols, Phenols and ethers)
 1) CH₃CH₂CHO 2) CH₃CH(OH)CH₃ 3) CH₃CH₂CH₂OH 4) (CH₃CH₂CH₂)₃B
155. In the following reaction, product (p) is (Aldehydes, Ketones & Carboxylic acids)
- $$\text{R} - \overset{\text{O}}{\parallel}{\text{C}} - \text{Cl} \xrightarrow[\text{Pd/BaSO}_4]{\text{H}_2} \text{P}$$
- 1) RCHO 2) RCH₃ 3) RCOOH 4) RCH₂OH
156. Ozonolysis of an organic compound gives formaldehyde as one of the products. This confirms the presence of (Aldehydes, Ketones & Carboxylic acids)
 1) Two ethylenic double bonds 2) a vinyl group
 3) an isopropyl group 4) an acetylenic triple bond
157. Identify X, Y and Z in the given reaction : (Amines)
- $$\text{CH}_2 = \text{CH}_2 \xrightarrow[\text{CCl}_4]{\text{Br}_2} \text{X} \xrightarrow[\text{(2moles)}]{\text{NaCN}} \text{Y} \xrightarrow{\text{LiAlH}_4} \text{Z}$$
- | | | |
|------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| X | Y | Z |
| 1) X - CH ₂ Br - CH ₂ Br | Y - CH ₃ CH ₂ CH ₂ CN | Z - CH ₃ CH ₂ CH ₂ CH ₂ NH ₃ |
| 2) X - CH ₂ Br - CH ₂ Br | Y - CH ₃ CH ₂ CN | Z - CH ₃ CH ₂ CH ₂ NH ₂ |
| 3) X - CH ₃ CH ₂ Br | Y - CH ₃ CH ₂ CN | Z - CH ₃ CH ₂ CH ₂ NH ₂ |
| 4) CH ₂ Br - CH ₂ Br | Y - NCCH ₂ CH ₂ CN | Z - H ₂ NCH ₂ CH ₂ CH ₂ CH ₂ NH ₂ |
158. Invert sugar is (Bio Molecules)
 1) a type of cane sugar
 2) Optically inactive form of sugar
 3) Mixture of glucose and galactose
 4) Mixture of glucose and fructose in equimolar quantities
159. The S in buna - S refers to (Polymers)
 1) Sulphur 2) Styrene 3) sodium 4) salicylate
160. Barbituric acid and its derivatives are well known as (Chemistry in everyday life)
 1) Tranquilizers 2) antiseptics 3) analgesics 4) antipyretics
