

MHT CET 2026 Mathematics Answer Key PDF

Chemistry

1. Option (c) $0.693/k$

Explanation: For a first-order chemical reaction, the half-life (the time required to reduce the reactant concentration to half its initial value) is independent of initial concentration and is given by $t_{1/2} = \frac{\ln 2}{k} \approx \frac{0.693}{k}$.

2. Option (d) 36

Explanation: The Effective Atomic Number (EAN) is calculated using the relation $\text{EAN} = Z - x + 2(\text{CN})$. For cobalt in $[\text{Co}(\text{NH}_3)_6]^{3+}$, we have $Z = 27$, oxidation state $x = +3$, and coordination number $\text{CN} = 6$, yielding $\text{EAN} = 27 - 3 + 12 = 36$.

3. Option (c) 4000 kg/m^3

Explanation: The volume of the cube is $V = a^3 = (0.04 \text{ m})^3 = 6.4 \times 10^{-5} \text{ m}^3$ and its mass is $m = 0.256 \text{ kg}$. Substituting these values into the density formula $\rho = m/V$ yields the density of the material as 4000 kg/m^3 .

4. Option (c) 3

Explanation: Potassium sulfate (K_2SO_4) is a strong electrolyte that dissociates completely in water according to the equation $\text{K}_2\text{SO}_4 \rightarrow 2\text{K}^+ + \text{SO}_4^{2-}$. This complete dissociation produces 3 ions, giving a Van't Hoff factor of $i = 3$.

5. Option (b) Na metal

Explanation: During the electrolysis of molten sodium chloride, sodium ions (Na^+) migrate to the negatively charged cathode where they undergo reduction to produce liquid sodium metal (Na(l)) as the primary product.

6. Option (c) Adsorption of noble gases on solid surface

Explanation: Physisorption is characterized by weak, non-specific van der Waals forces of attraction between the adsorbent and adsorbate. Since noble gases are chemically inert, their adsorption on solid surfaces occurs exclusively via these weak interactions.

7. Option (a) AlCl_3

Explanation: Friedel-Crafts alkylation involves the electrophilic substitution of an aromatic ring using an alkyl halide. The reaction is catalyzed by anhydrous aluminium chloride (AlCl_3), which acts as a powerful Lewis acid to generate the required carbocation electrophile.