Vidyamandir Classes
Gurukul for IITJEE Preparation
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MOCK TEST PAPER # 1

HINTS & SOLUTION

CHEMISTRY (CLASS-XII)

2. Diastase.

3. Oxidation state −3 +3

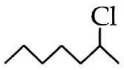
Compound NH_3 N_2O_3

4. (i) Potassium dichromate in presence of dilute sulphuric acid.

(ii) Potassium permanganate in alkaline medium.

10. Reactivity towards S_N1 reaction :

(i)  will react faster since  is more stable than 2° carbocation.

(ii)  reacts faster because 2° carbocation is more stable than 1° carbocation.

11. 2-3% solution of iodine in water, used as antiseptic.

12. Saccharine, aspartame, alitame.

13. (i) Hybridisation d^2sp^3 ; geometry-octahedral

(iii) Dichlorido *bis*-(ethane-1,2-diamine) iron (III) chloride.

14. Using formula, $Z = \dfrac{d \times N_A \times a^3}{M}$

$$Z = \frac{2.7\times10^3\ \text{kg m}^{-3}\times6.022\times10^{23}\times(4.05\times10^{-10}\ \text{m})^3}{2.7\times10^{-2}\ \text{kg mol}^{-1}}$$

$\therefore \quad Z = 4$

Hence, unit cell is cubic close pack (*fcc*).

15. IUPAC name : 1, 1, 1-Trichloro-2,2-di (4-chlorophenyl) ethane

16. (a) Let the rate law for the reaction be

Rate $= k[P]^x[Q]^y$.

Then, $\dfrac{r_2}{r_1} = \dfrac{2.4\times10^{-1}}{6.0\times10^{-2}} = \dfrac{k[0.4]^x\times[0.1]^y}{k[0.2]^x\times[0.1]^y}$

$4 = 2^x \implies x = 2$

Again, $\dfrac{r_3}{r_1} = \dfrac{1.2\times10^{-1}}{6\times10^{-2}} = \dfrac{k[0.2]^x\times[0.2]^y}{k[0.2]^x\times[0.1]^y}$

or, $2 = 2^y \implies y = 1.$

Hence, the rate law $= k[P]^2[Q]^1$.

19. (i) $2F_{2\,(g)} + 2H_2O_{(l)} \longrightarrow 4H^+_{(aq)} + 4F^-_{(aq)} + O_{2(g)}$

(ii) $Ca_3P_2 + 6H_2O \longrightarrow 3Ca(OH)_2 + 2PH_3$

(iii) $6XeF_4 + 12H_2O \longrightarrow 4Xe + 2XeO_3 + 24HF + 3O_2$

25. (a) Relation between m and X

$$X_1 = \frac{n_1}{n_1+n_2}, X_2 = \frac{n_2}{n_1+n_2} \quad \begin{cases} n_1 = \text{No. of moles of solute} \\ n_2 = \text{No. of moles of solvent} \end{cases}$$

$$\frac{X_1}{X_2} = \frac{n_1}{n_2} = \frac{\text{Moles of solute}}{\text{Moles of solvent}} = \frac{w_1}{m_1}\times\frac{m_2}{w_2}$$

OR

$$\frac{X_1\times1000}{X_2\times m_2} = \frac{w_1\times1000}{m_1\times w_2} \quad \therefore \quad \frac{X_1\times1000}{(1-X_1)m_2} = \text{Molality}$$

(b) Using formula $\alpha = \dfrac{i-1}{n-1}$

or $0.4 = \dfrac{i-1}{0.5-1}$ or $0.4 = \dfrac{i-1}{-0.5}$

or $i = 1 - 0.2 = 0.8$

OR

(b) $M_B = \dfrac{W_B \times R \times T}{\pi \times V}$

We get,

$$M_B = \frac{8.95\times10^{-3}\ \text{g}\times0.0821\ \text{L atm K}^{-1}\ \text{mol}^{-1}\times298\ \text{K}}{\frac{0.335}{760}\ \text{atm}\times35\times10^{-3}\ \text{L}}$$

$M_B = 14193.29\ \text{g mol}^{-1}$.

26. (a)

(i) $5NO_2^- + 2MnO_4^- + 6H^+ \longrightarrow 2Mn^{2+} + 3H_2O + 5NO_3^-$

(ii) $2K_2CrO_4 + 2H^+ \longrightarrow K_2Cr_2O_7 + 2K^+ + H_2O$

(iii) $3MnO_4^{2-} + 4H^+ \longrightarrow 2MnO_4^- + MnO_2 + 2H_2O$

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