Vidyamandir Classes
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MOCK TEST PAPER # 3

HINTS & SOLUTION

CHEMISTRY (CLASS-XII)

4. The unit of rate constant is L mol^{-1} s^{-1} or (mol $L^{-1})^{-1}$ s^{-1}. Equate this with general expression of (mol $L^{-1})^{1-n}$ s^{-1}.

(mol $L^{-1})^{-1}$ s^{-1} = (mol $L^{-1})^{1-n}$ s^{-1}

$\therefore$ $-1 = 1 - n$ or $n = 2$

The order of reaction = 2

5. The ionisation isomer of $[Cr(H_2O)_5Br]SO_4$ is $[Cr(H_2O)_5SO_4]Br$.

6. The correct order is,

Acetophenone < *p*-Tolualdehyde < Benzaldehyde < *p*-Nitrobenzaldehyde

8. Alcohols are relatively more soluble in water than the corresponding hydrocarbons because alcohol molecules can form hydrogen bonds with water.

10. (a) $Cl_2 + H_2O \longrightarrow 2HCl + [O]$

(b) $2NaOH + Cl_2 \xrightarrow[\text{(Cold and dilute)}]{} NaCl + NaOCl + H_2O$

11. (a) Glucose and galactose.

(b) Soluble in water, so easily excreted in urine.

15. (a) Rate of production of iodine

$$= \frac{1}{2} \times \text{Rate of disappearance of HI}$$

$$\frac{d[I_2]}{dt} = \frac{1}{2} \times \left(\frac{-d[HI]}{dt}\right)$$

(b) $k = 9.1 \times 10^{-2}$ L mol^{-1} s^{-1}

16. (i) Cubic close-packed structure is having face centred cubic structure.

Thus, for *fcc*, $a = 2\sqrt{2} \cdot r$

or $a = 2 \times 1.414 \times 125$ pm = 354 pm

(ii) Volume of unit cell, $a^3 = (354 \times 10^{-10}\ cm)^3$

$= 44.36 \times 10^{-24}\ cm^3$

Number of unit cells in 1.00 cm^3

$$= \frac{1}{44.36 \times 10^{-24}} = 2.25 \times 10^{22}$$

25. (a) Mass of CO_2 = Moles of CO_2 × Mol. mass of CO_2

$= 42.14 \times 10^{-3} \times 44 = 1.854$ g

OR

(a) $$M_B = \frac{K_f \cdot W_B \cdot 1000}{\Delta T_f \cdot W_A}$$

$$= \frac{1.86 \times 0.5 \times 1000}{0.24 \times 100} = 38.75$$

Now, normal molecular mass of KCl = 39 + 35.5 = 74.5

So, $$i = \frac{\text{Observed moles of solute}}{\text{Normal moles of solute}} = \frac{1+\alpha}{1}$$

$\therefore$ $\frac{1+\alpha}{1} = 1.92$ or $1 + \alpha = 1.92$

or $\alpha = 0.92$

$\therefore$ Percentage ionisation = 92 %

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