Nishant Jindal

Concentration terms

S-II

(13)

M_2CO_3

$\frac{48}{2M+60} \times 100 = 48$

$M = 20$

A^{+1} B^{2-}

5 mg M_2CO_3

$\frac{5 \times 10^{-3}}{100}$ mol M_2CO_3

moles of metal $= 2 \times \frac{5 \times 10^{-3}}{100}$

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Concentration terms

$$A_xB_y + O_2 \longrightarrow AO + \text{oxide of } B$$

2.5 gm → 3 gm

$$\left(\frac{2.5}{24x+14y} \times x\right) = \frac{3}{40}$$

$$100x = 72x + 42y$$

$$28x = 42y \qquad \frac{x}{y} = \frac{3}{2}$$

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Concentration terms

O-II (3)

$$A + B \longrightarrow \text{Compound}$$

$$X\ gm \qquad \frac{Y\ atoms}{N_A} \qquad \frac{5\ molecule}{N_A}$$

$$X\ gm + \frac{y}{N_A} M_B = \frac{5}{N_A} \times M$$

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Concentration terms

(5) $P_{N_2} = 860 - \text{aqueous tension}$

$= 860 - 24 = 836$ mm of Hg

$= \underline{1.1 \text{ atm}}$

(6) (A) ✗ $BeCO_3 \rightarrow BeO + CO_2$

$\frac{1}{2}$ mol $\frac{1}{2}$ mol

$69 \times \frac{1}{2} = \underline{34.5 \text{ gm}}$

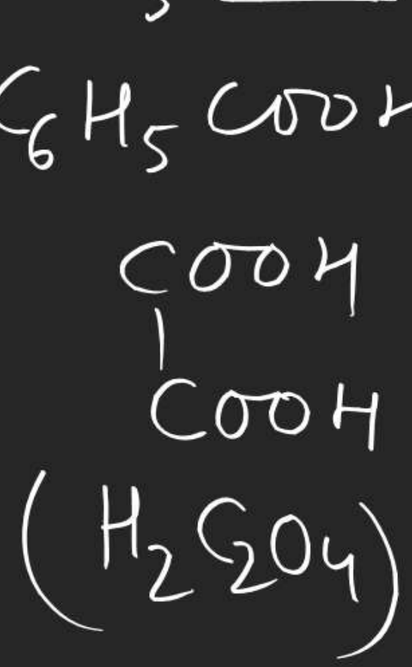
Concentration terms

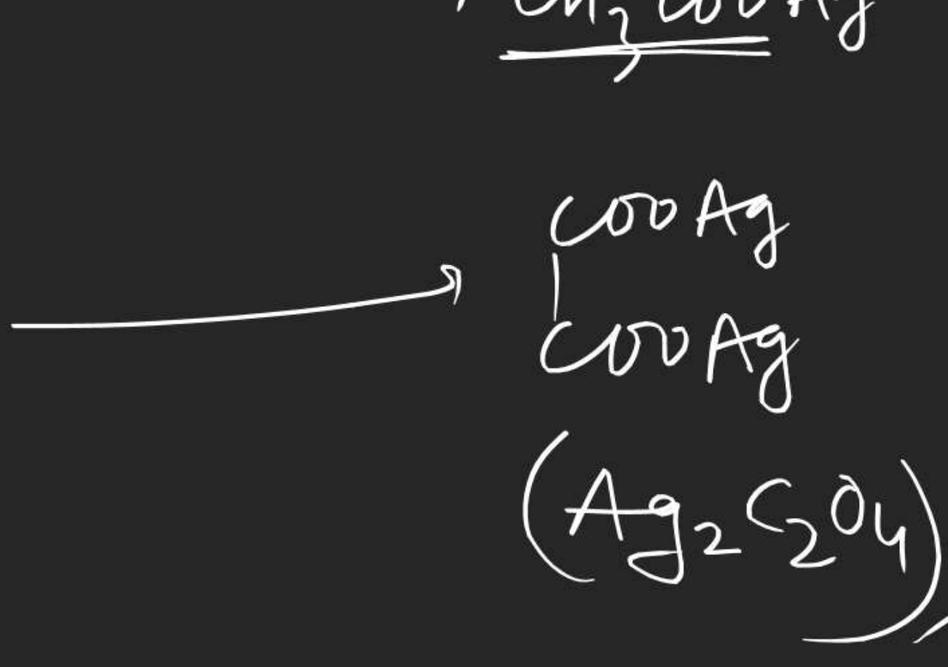
(8)

$HCOOH + AgNO_3 \rightarrow HCOOAg$ (ppt)

$CH_3COOH \rightarrow CH_3COOAg$

C_6H_5COOH





$H_nA \downarrow AgNO_3$

Ag_nA (ppt)

Silver salt

$$Ag_nA \xrightarrow{\Delta} Ag$$

$n = 2$

$$\frac{1}{216 + M_A} \times 2 = \frac{0.5934\ gm}{108}$$

$$M_A =$$

$$\text{Molarmass} = M_A + 2$$

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Concentration terms

(21)

$\uparrow^{238}$

$UF_6 + H_2O \longrightarrow [U,O,F] + HF$

3.52 | 0.36 | 3.08 | 0.8

$\frac{3.52}{352}$

H: 0.04 | O: 0.32

U: 2.38 | O: 0.32 | F: 0.38

H	F
$\frac{5}{1}$	$\frac{95\ gm}{19}$
5	5

5 : 5

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Concentration terms

(14)

$2NH_3 + 5/2\,O_2 \longrightarrow 2NO + 3H_2O$

6 6

$2NO + O_2 \longrightarrow 2NO_2$

6 6

$2NO_2 + H_2O \longrightarrow HNO_3 + HNO_2$

6 3 3

$3HNO_2 \longrightarrow HNO_3 + 2 + H_2O$

3 1

(A) T
(B)
(C)
(D)

$\frac{1}{3} \times 100$

$\frac{1}{4}$

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Concentration terms

(8) Mole fraction

0.2 mole fraction $C_6H_{12}O_6$ in H_2O

1 mol solution contains 0.2 mol $C_6H_{12}O_6$

moles of H_2O = 0.8 mol

$= 0.8 \times 18$ gm

$= 14.4$ gm

$0.2 \times M$ gm

0.2×180

$= 36$ gm

$W_{soln} = 14.4 + 36$ gm $= 50.4$ gm

$\%\ w/w = \frac{36}{50.4} \times 100$

$ppm = \frac{36}{50.4} \times 10^6$

molality of glucose $= \frac{0.2}{14.4} \times 1000$

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Concentration terms

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Concentration terms

80 gm NaOH is mixed with H_2O to produce 500ml soln
Given d_{soln} = 1.2 gm/ml find

1. % w/w
2. % w/v
3. gm/lit
4. ppm
5. Molarity
6. Molality
7. Mole fraction

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500 ml Solution contains 80 gm NaOH

500 × 1.2 gm solution " 80 gm NaOH

600 gm " 80 gm NaOH = 2 mol

$W_{Solvent} = 600 - 80 =$ 520 gm $= \frac{520}{18}$ mol

Vol of solution mass of solute

mass of solution mass of solvent

$$\text{molality} = \frac{2}{520} \times 1000 = \frac{50}{13}$$

$$\text{mole fraction} = \frac{2}{2 + \frac{520}{18}}$$

% W/W

$600 \rightarrow 80$

$100 \rightarrow \frac{80}{600} \times 100 = \frac{40}{3}$

% W/V

$500\,ml \rightarrow 80$

$100 \rightarrow \frac{80}{500} \times 100 = 16$

$$\text{gm/lit} = \frac{80}{500} \times 1000 = 160$$

$$\text{ppm} = \frac{40}{3} \times 10^4$$

$$M = \frac{2}{500} \times 1000 = 4\,M$$

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Density of (5M HF) solution was found to be 1.5 gm/ml

find ① % W/W ② % W/V ③ gm/lit ④ ppm ~~⑤ M~~ ⑥ m ⑦ mole fraction

1000 ml solution contains 5 moles of HF

1000 × 1.5 gm " " 5 × 20 = 100 gm HF

1500 gm solution " 100 gm HF

$W_{solvent} = 1400$

$n_{solvent} = \frac{1400}{18}$

⑦ mole fraction $= \frac{5}{5 + \frac{1400}{18}} = \frac{n}{n+N}$

2 3 $\frac{2}{2+3}$

① $\%W/W = \frac{100}{1500} \times 100 = 20/3$

② $\%W/V = \frac{100}{1000} \times 100 = 10$

③ gm/lit $= 100$

④ ppm $= 20/3 \times 10^4$

⑥ $m = \frac{5}{1400} \times 1000$

Conc. term

O - I	1 — 10
S - I	1 — 10

Mole concept

SC ⟶ 20

Numerical ⟶ 5 out of 10