

**106.(B)** Moles of  $\text{CaO} = \frac{1.62}{56}$

$$\Rightarrow \text{Moles of } \text{CaCl}_2 = \frac{1.62}{56}$$

$$\Rightarrow \text{Mass of } \text{CaCl}_2 = \frac{1.62}{56} \times 111 = 3.21 \text{ gm}$$

$$\Rightarrow \% = \frac{3.21}{10} \times 100 = 32.1\%$$

**107.(D)** Volume of 1L of steam =  $0.00006 \times 1000 \text{ cm}^3 = 0.06 \text{ cm}^3$

**108.(A)**  $m = \frac{\chi_B}{1 - \chi_B} \times \frac{1000}{M_A} = \frac{0.2}{1 - 0.2} \times \frac{1000}{18} = 13.88 \text{ m}$

**109.(D)**  $\frac{(20 \times 1) + (10 \times 0.25)}{40 + 20} = 0.75$        $\frac{(100 \times 1) + (50 \times 0.25)}{100 + 50} = 0.75$   
 $\frac{(40 \times 1) + (20 \times 0.25)}{40 + 20} = 0.75$        $\frac{(50 \times 1) + (25 \times 0.25)}{50 + 25} = 0.75$

**110.(B)** Mass % of  $\text{H}_2\text{SO}_4 = \frac{(0.9 \times 100)}{(0.9 \times 100) + (1 \times 100)} \times 100\% = \frac{90}{90 + 100} \times 100\% = \frac{90}{190} \times 100\% = 47.36\%$

**111.(D)** At the end point using phenolphthalein as indicator uses complete NaOH and  $\frac{1}{2}$  Meq. of  $\text{Na}_2\text{CO}_3$ .

$$\therefore \text{Meq. of NaOH} + \frac{1}{2} \text{ Meq. of } \text{Na}_2\text{CO}_3 = \text{Meq. of HCl}$$

$$\frac{1}{40} \times 1000 + \frac{1}{2} \times \frac{1}{106} \times 2 \times 1000 = V \times 1 \quad \therefore V = 34.4 \text{ ml}$$

**112.(C)** 1 moles of  $\text{NH}_3$  neutralizes one mole of HCl

$$\text{Now, moles of HCl} = \frac{292}{36.5} = 8$$

$$\Rightarrow \text{Moles of } \text{NH}_3 \text{ required} = 8 \Rightarrow \text{Moles of } (\text{NH}_4)_2\text{SO}_4 \text{ required} = 4$$

$$\Rightarrow \text{Mass of } (\text{NH}_4)_2\text{SO}_4 \text{ required} = 4 \times 132 = 528 \text{ g}$$



$$1 \text{ mol C} \equiv 1 \text{ mol O}_2 = 22.4 \text{ L O}_2 \text{ gas at STP}$$

$$\frac{1000}{12} = \text{mol C} \equiv 22.4 \times \frac{1000 \text{ L}}{12} \text{ O}_2 \text{ gas at STP} = 1866.6 \text{ L}$$

$$\text{Volume of air} = \frac{1866.6}{0.21} = 8888.5 \text{ L}$$

**114.(A)** Let amount of  $\text{Na}_2\text{CO}_3$  in 1 gm of mixture be 'a' and since  $\text{Na}_2\text{CO}_3$  and  $\text{NaHCO}_3$  are in equimolar amounts.

$$\frac{a}{106} = \frac{(1-a)}{84}$$

$$\begin{aligned} \therefore a &= 0.558 \text{ gm} \\ \therefore \text{Weight of NaHCO}_3 &= (1 - 0.558) = 0.442 \text{ gm} \\ \text{Meq. of Na}_2\text{CO}_3 + \text{Meq. of NaHCO}_3 &= \text{Meq. of HCl} \\ \therefore \frac{0.558}{53} \times 1000 + \frac{0.442}{84} \times 100 &= 0.1 \times V \\ \therefore V &= 157.9 \text{ mL} \end{aligned}$$

**115.(A)** Mass of alcohol in 2<sup>nd</sup> solution =  $\frac{10}{100} \times 80 \times 0.9 = 7.2 \text{ g}$

Mass of alcohol in 1<sup>st</sup> solution =  $\frac{90}{100} \times V \times 0.8 = \frac{7.2V}{10} \text{ g}$

Now,  $7.2 = \frac{7.2V}{10} \Rightarrow V = 10 \text{ mL}$