

Daily Tutorial Sheet-2

Level-1

$$16.(A) \quad M_1V_1 + M_2V_2 = (V_1 + V_2) \cdot M \Rightarrow V_1 = \frac{3000 - 1500}{6} = \frac{1500}{6} = 250 \text{ mL}$$

$$17.(A) \quad \text{Molarity} = \frac{10 \times d}{M_0} \\ = \frac{10 \times 20 \times 1.28}{98} = 2.56 \text{ M}$$

$$18.(A) \quad \text{Average atomic mass} = \left(\frac{90}{100} \times 200 \right) + \left(\frac{8}{100} \times 199 \right) + \left(\frac{2}{100} \times 202 \right) \approx 200$$

19.(C) 50% Water

$$\Rightarrow \text{Mass of water} = \text{Mass of Na}_2\text{SO}_3 = 126\text{g}$$

$$\Rightarrow \text{Moles of water} = \frac{126}{18} = 7 \Rightarrow \text{Formula is Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}.$$

20.(D) 7 gm of sodium in 100 gm of acid dye

$$\therefore 23 \text{ gm of sodium will be present in} = \frac{23 \times 100}{7} = 328.5 \text{ (molecular of dye salt)}$$

In acid dye, one Na atom replaces a H atom.

$$\therefore \text{Molecular weight of acid dye} = 328.5 - 23 + 1 = 306.5$$

21.(A) Let x be atomic mass of metal, M

$$\text{Now, } \frac{28}{100} \times (3x + 28) = 28 \Rightarrow x = 24$$

22.(A) Meq. of metal = Meq. of oxygen

$$1000 \times \frac{0.1}{E} = \frac{46.6}{22400} \times 1000 \times 2 \times 2 \Rightarrow E = 12$$

$$23.(C) \quad \text{Equivalent weight} = 37.2 = \frac{\text{Atomic weight}}{2} \Rightarrow \text{Atomic Weight} = 74.4$$

$$\text{Molecular weight of chloride} = 74.4 + 71 = 145.4$$

24.(C) Apply $10 \times d = MM_0$.

25.(B) Equivalent of metal sulphate = Equivalent of metal

$$\Rightarrow \frac{\text{Wt. of metal sulphate}}{\text{Eq. wt. of metal sulphate}} = \frac{\text{Wt. of metal}}{\text{Eq. wt. of metal}}$$

$$\Rightarrow \frac{W_{\text{Metal sulphate}}}{E_M + E_{\text{Sulphate}}} = \frac{W_M}{E_M} \Rightarrow \frac{W_{\text{Metal sulphate}}}{W_M} = \frac{E_M + 48}{E_M}$$

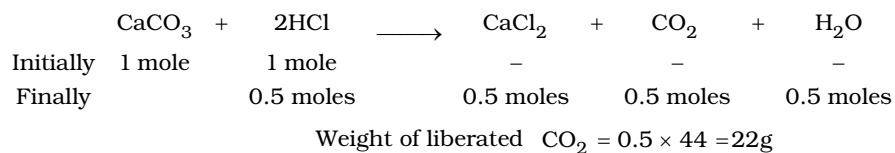
$$\Rightarrow \frac{100}{20} = \frac{E_M + 48}{E_M}$$

$$\therefore E_M = 12$$

$$26.(C) \quad \text{Mass of 1 mole of } e^- \text{ s} = \text{Mass of one } e^- \times N_A = 9.1 \times 10^{-31} \times 6.02 \times 10^{23} \text{ kg} = 54.6 \times 10^{-8} \text{ kg} = 0.55 \text{ mg}$$

27.(A) Molality is number of moles of solute per kg of solvent.

28.(C)



29.(A) Amount of Ag = $4 \times 108 = 432 \text{ g}$.

30.(A) 1 gram atom $\equiv 6.02 \times 10^{23}$ atoms

$$\Rightarrow 1 \text{ atom} \equiv \frac{1}{6.02 \times 10^{23}} = 1.66 \times 10^{-24} \text{ gm atoms}$$