

Q.1. \*\*\* What mass of non volatile Solute (urea) to dissolve in 100 gm of Solvent. in order to V.P. by 30% decrease

Sol. 
$$\frac{P_A^0 - P_s}{P_s} = \frac{n \rightarrow \text{Solute}}{N \rightarrow \text{Solvent}} \Rightarrow \frac{100 - 70}{70} = \frac{W_B/60}{100/18}$$

Given:  $W_A = 100 \text{ gm}$ ,  $M_A = 18$   
 $W_B = ?$ ,  $M_B = 60$   
 Let  $P_A^0 = 100$   
 $P_s = 70$

$$\frac{30}{70} = \frac{W_B}{60} \times \frac{18}{100} \Rightarrow W_B = \frac{1000}{7}$$

$$W_B \approx 143 \text{ gm.}$$

Q.2. The V.P. of water at room temp. is 23.8 mm of Hg. The V.P. of an Aqueous Sol<sup>n</sup> of Sucrose with mole Fraction 0.1 is equal to.

- (a) 23.9 mm of Hg (b) 24.2 - " (c) 21.42 - " (d) 31.44 - "

Sol. given  $\div$

$$P_A^{\circ} = 23.8 \text{ mm of Hg.}$$

$$X_B = 0.1 ; X_A = 1 - 0.1 ; P_B^{\circ} = 0$$

$$= 0.9 ;$$

$$P_s = P_A^{\circ} X_A + P_B^{\circ} X_B$$

$$P_s = 23.8 \times 0.9 + 0$$

$$P_s = 21.42 \text{ mm of Hg.}$$

Ideal Sol<sup>n</sup>

Non-ideal Sol<sup>n</sup>  
 | Positive deviation | Negative deviation