O-I 4 — 22

S-I S⁻ — 11

S-II 11

(20) $P_A = y_A P_T = 2$

$P_B = y_B P_T = 3$

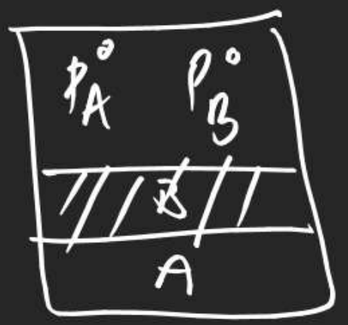
(A)

(21) Boiling point

760 torr = 1 atm = P_{ext} = vap. pr. = P_T

$760 = P_T = x_A \times 900 + x_B \times 360$

(22)



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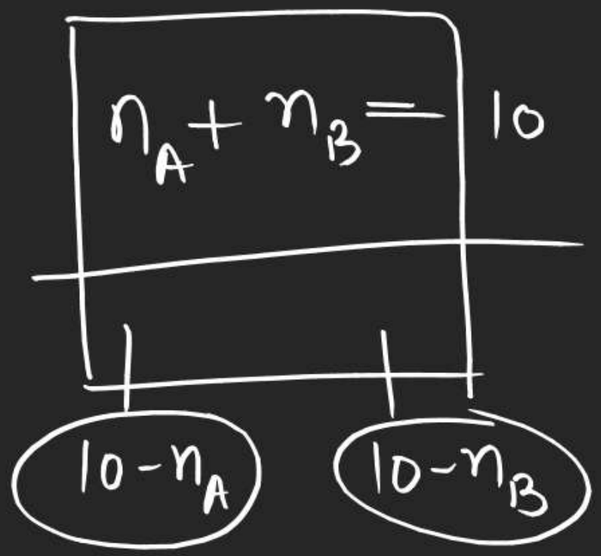

$$y_A P_T = x_A P_A^0$$

$$\frac{n_A}{10} P_T = \frac{10 - n_A}{10} \times 200$$

$$\frac{n_B}{10} P_T = \frac{10 - n_B}{10} \times 100$$

$$\frac{n_A}{n_B} = \frac{10 - n_A}{10 - n_B} \times \frac{2}{1}$$

$$n_A^2 = (10 - n_A)^2 \times 2$$

$$n_A = (10 - n_A) \times \sqrt{2}$$

$$n_A = \frac{10\sqrt{2}}{1 + \sqrt{2}}$$

$$n_B = \frac{10}{1 + \sqrt{2}}$$

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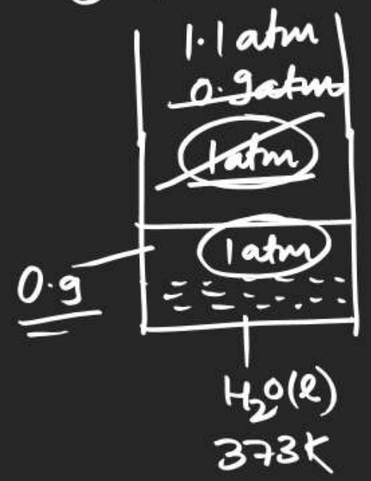
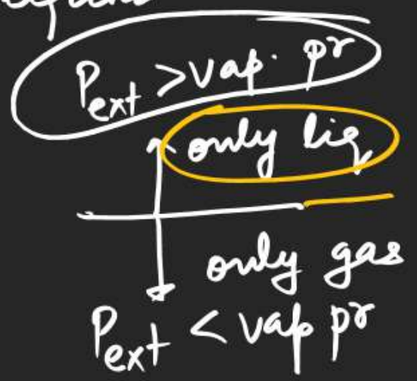
① By changing external pressure at constant temp

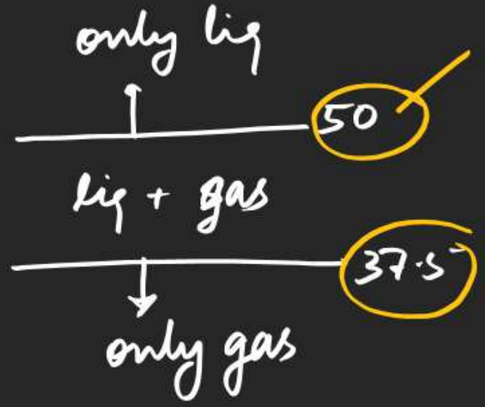
(a) for pure liquid





(b)

Dew point



$$P_T = X_A P_A^0 + X_B P_B^0$$

$$\frac{1}{P_T} = \frac{y_A}{P_A^0} + \frac{y_B}{P_B^0}$$

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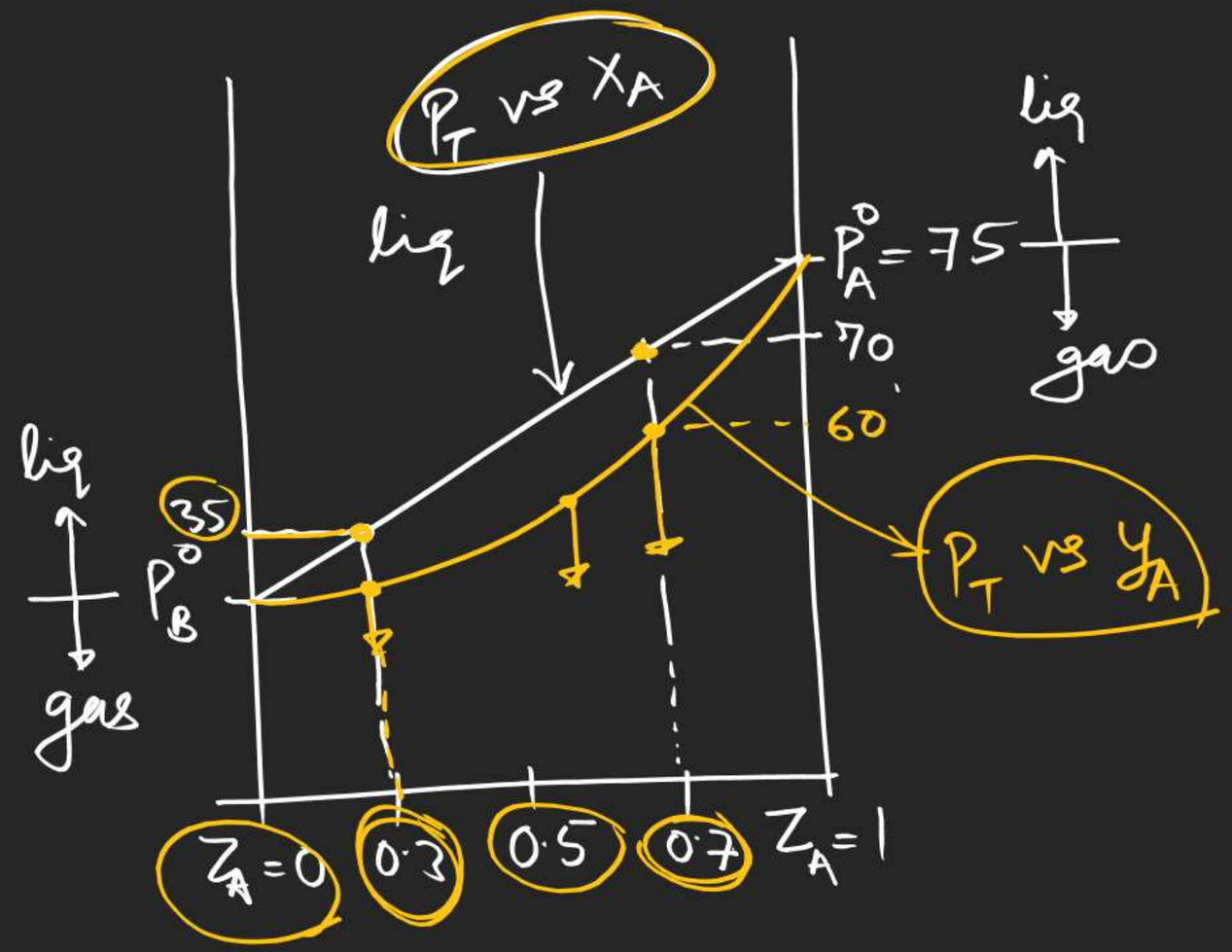

$$P_T = X_A P_A^0 + X_B P_B^0$$

$$P_T = P_B^0 + X_A (P_A^0 - P_B^0)$$

$$\frac{1}{P_T} = \frac{y_A}{P_A^0} + \frac{y_B}{P_B^0}$$

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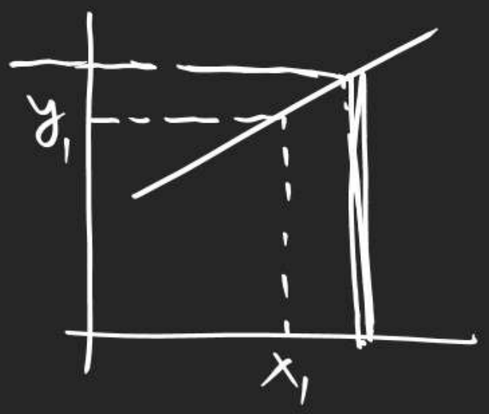
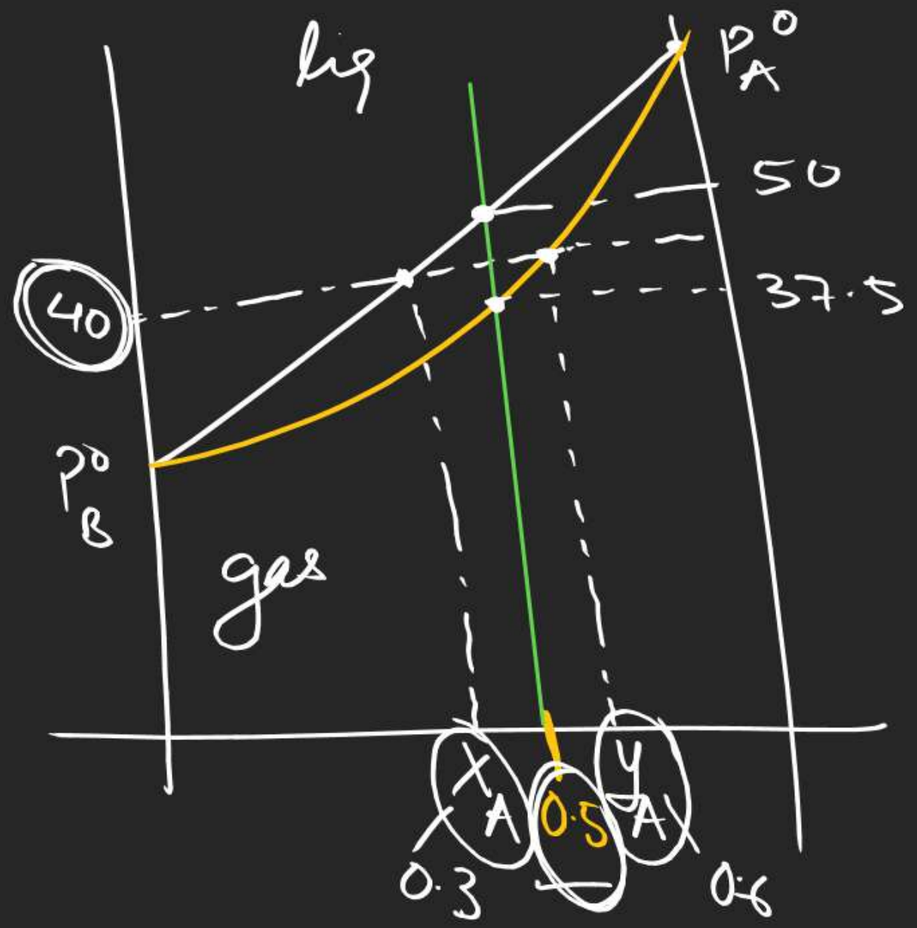
$y = mx + c$

$40 = \left(P_T = P_B^0 + X_A (P_A^0 - P_B^0) \right)$



$$\frac{1}{40} = \frac{1}{P_T} = \frac{y_A}{P_A^0} + \frac{y_B}{P_B^0}$$



Initially

$X_A = 0.5$ $X_B = 0.5$

at 40 torr

$X_A = 0.3$ $y_A = 0.6$

$X_B = 0.7$ $y_B = 0.4$

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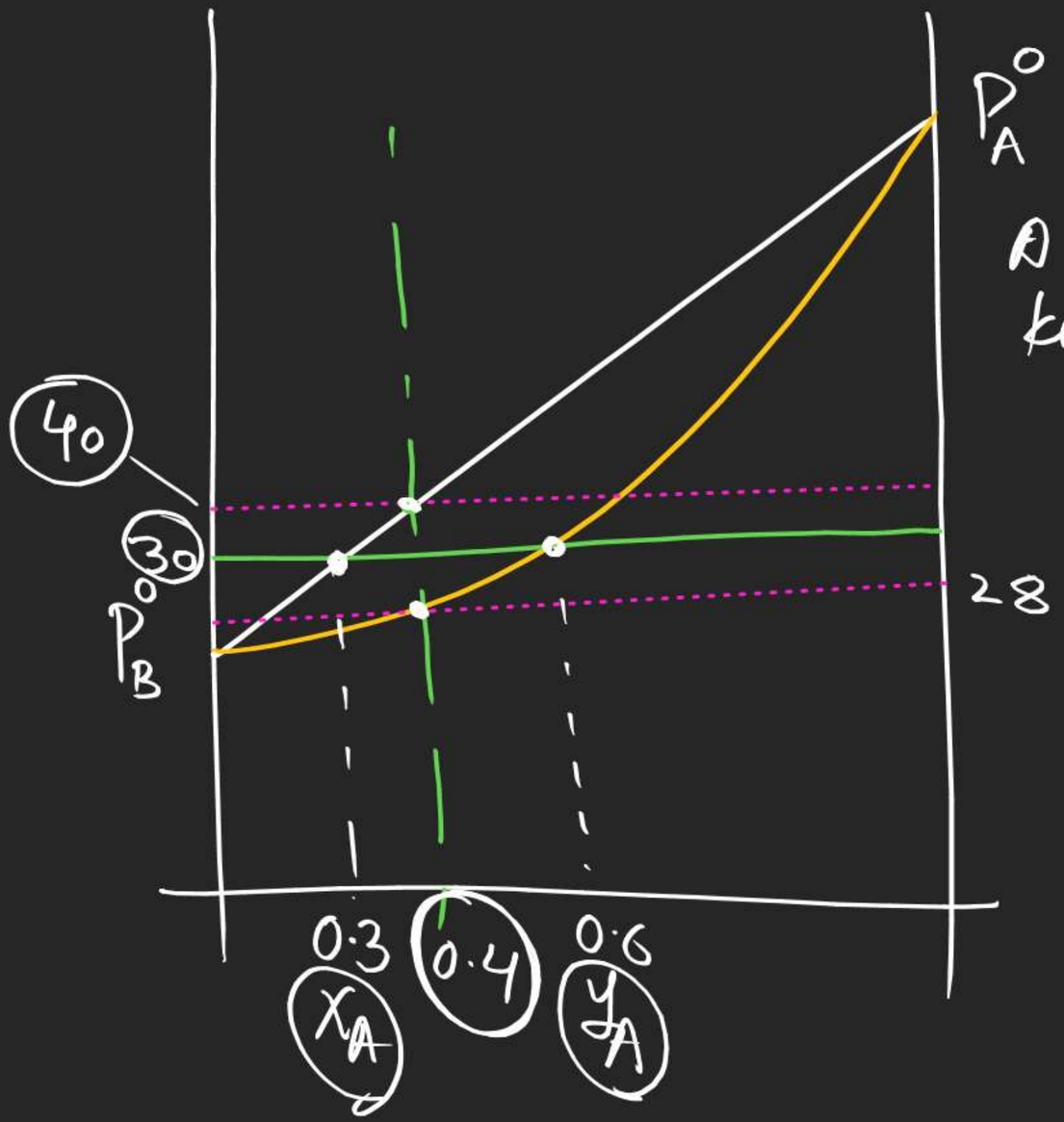

A solution having $x_A = 0.4$ is kept at 30 torr. find

$x_A = 0.3$

$x_B = 0.7$

$y_A = 0.6$

$y_B = 0.4$

(b) By changing temp at constant external pressure.

@ for pure liq

Electro
JEE - Adv