

ΘΕΜΑ Β

mol	$N_2 + 3H_2 \rightleftharpoons 2NH_3$		
αρχ	η	η	
ακτ	-x	-3x	
Παρ			2x
Χ.1	η-x	η-3x	2x

↓
 $n_{\text{CH}_4(\text{g})} = 2\eta - 2x$

$$\Delta_1) \frac{V_{NH_3}}{V_{NH_2}} = \frac{n_{NH_3}}{n_{NH_2}} = \frac{20}{100} \Rightarrow \frac{n_{NH_3}}{n_{NH_2}} = 0,2 \Rightarrow \frac{2x}{2\eta - 2x} = 0,2 \Rightarrow$$

$$2x = 0,4\eta - 0,4x \Rightarrow 2,4x = 0,4\eta \Rightarrow \frac{x}{\eta} = \frac{0,4}{2,4}$$

$$\frac{x}{\eta} = \frac{1}{6} \Rightarrow \boxed{\frac{x}{\eta} = \frac{1}{6}} \quad \textcircled{1}$$

$$n_{H_2} = \frac{\eta}{3} < \frac{\eta}{1} = n_{N_2} \Rightarrow H_2 : \sigma \text{ : η η μ κ α σ π α}$$

η απόδοση είναι (με την ποσότητα H_2)

$$\alpha = \frac{3x}{\eta} = 3\left(\frac{x}{\eta}\right) = 3\left(\frac{1}{6}\right) = \frac{3}{6} = 0,5 \quad (50\%)$$

$$\Delta_2) \left. \begin{aligned} n_{NH_3} = 2\eta - 2x = 10 &\Rightarrow \boxed{\eta - x = 5} \quad \textcircled{2} \\ \Rightarrow 6x - x = 5 \\ 5x = 5 \\ \boxed{x = 1} \end{aligned} \right\}$$

από ①, $\Rightarrow \eta = 6x$

όρα $n_{NH_3} = 2x = 2 \text{ mol} \Rightarrow n_{N_2} = \eta - x = 5, \quad n_{H_2} = \eta - 3x = 3 \text{ mol}$

$$K_c = \frac{\left(\frac{2}{V_1}\right)^2}{\left(\frac{5}{V_1}\right)\left(\frac{3}{V_1}\right)} \Rightarrow \frac{20}{27} = \frac{4V_1^4}{5 \cdot 27V_1^2} \Rightarrow V_1^2 = \frac{100}{4} \Rightarrow V_1^2 = 25$$

$$\boxed{V_1 = 5 \text{ L}}$$

ΘΕΜΑ Α: $A_1 \rightarrow \Delta, A_2 \rightarrow \Gamma, A_3 \rightarrow A, A_4 \rightarrow A, A_5 \rightarrow A$