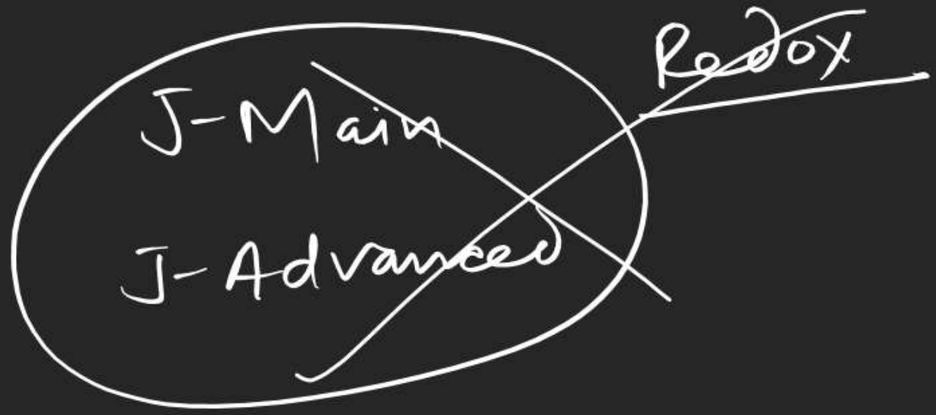
Nishant Jindal



O-I	1—15
S-I	1—10

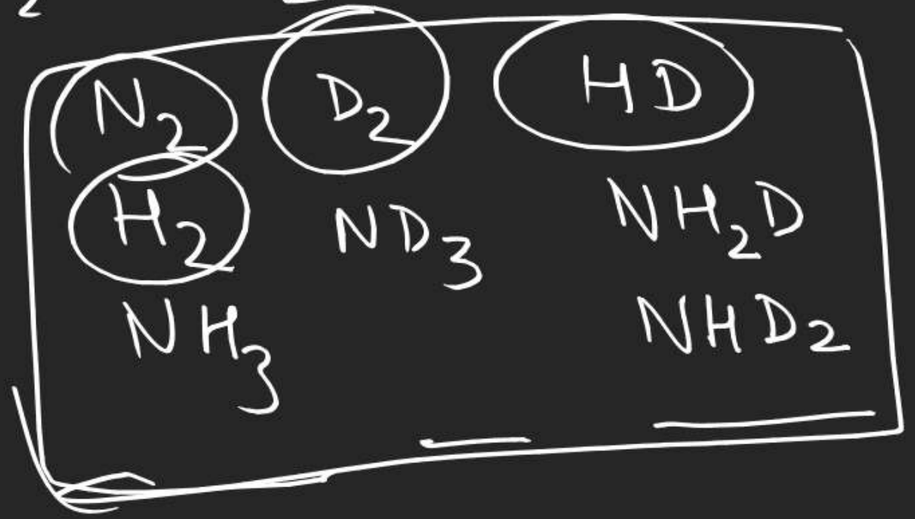
H
D

H_2 HD

H^1 H^2 T^3

$N_2 + H_2 \rightarrow NH_3$

$N_2 + D_2 \rightarrow ND_3$



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(12)

$$K_p = P_{H_2O}^2$$

$$K_c = [H_2O]^2$$

$$K_p = K_p(RT)^2$$

(9)

$$N_2 + 3H_2 \longrightarrow 2NH_3$$

$$Q = \frac{[NH_3]^2}{[N_2][H_2]^3}$$

(15)

$$K_1 = 25 \times 10^{-4}$$

$$= \frac{1}{25 \times 10^{-4}}$$

$$= \frac{100 \times 100}{25}$$

$$= 400$$

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Case-I (if $\frac{K_c}{C} \leq 10^{-3}$)

Case-II if $K_{eq} >> 1$

$$(1+x)^n = 1 + nx$$
$$(x << 1)$$

$K_c = 10^5$ M

(V = 10 lit)

	PCl_5	$\longrightarrow$	PCl_3	+	Cl_2
	$0.1 - x$		x		x

$$10^5 = \frac{x^2}{0.1 - x}$$

$$\frac{10^5}{0.1}$$

$$x^2 + 10^5 x - 10^4 = 0$$

$$x = \frac{-10^5 + \sqrt{10^{10} + 4\times10^4}}{2}$$

$$x = \frac{-10^5 + 10^5(1 + 4\times10^{-6})^{1/2}}{2}$$

$$= \frac{-10^5 + 10^5(1 + 2\times10^{-6})}{2}$$

$$= \frac{-10^5 + 10^5 + 2\times10^{-1}}{2}$$

$$= 0.1$$

0.09999

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$PCl_5 \longrightarrow PCl_3 + Cl_2 \qquad K_c = 10^5$

0.1	0	0
0	0.1	0.1
x	$0.1-x$	$0.1-x$

$$\frac{0.1 \times 0.1}{x} = 10^5$$

$$x = 10^{-7}$$

$$\frac{[PCl_3][Cl_2]}{[PCl_5]} =$$

$PCl_3 + Cl_2 \longrightarrow PCl_5 \qquad K = 10^{-5}$

$0.1-x$	$0.1-x$	ξ

$$\frac{\xi}{0.1 \times 0.1} = 10^{-5}$$

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$A \longrightarrow 2B \qquad K_c = 4 \times 10^5$

4×10^{-7}

V = 10 lit

A	B
0.2	0.4
0	$0.4 - x$
$x/2$	

$$\frac{(0.4)^2}{(x/2)} = 4 \times 10^5$$

$$[A] = \left(\frac{x}{2}\right) = \frac{16 \times 10^{-2}}{4 \times 10^5} = 4 \times 10^{-7}$$

$$[B] = 0.4$$

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$V = 10$ Lit $\quad A \longrightarrow 2B \quad K_c = 10^{-5}$

	2 mol
1 mol	0
$0.1 - x$	$2x$

$$10^{-5} = \frac{(2x)^2}{0.1}$$

$$(2x)^2 = 10^{-6}$$

$$[B] = (2x) = 10^{-3}$$

$V = 1$ Lit

$A + 2B \rightarrow C \quad K_c = 10^6$

A	2B	C
1	3	1
0	1	2
x	$1+2x$	$2-x$

$$\frac{(2)}{x(1)^2} = 10^6$$

$$x = 2 \times 10^{-6}$$

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$A \longrightarrow B \quad K_c = 10$

$2-x \quad x$

$\frac{[B]}{[A]} = \frac{x}{2-x} = 10$

$A \longrightarrow B \quad K = 10$

$\frac{[B]}{[A]} = 10$

$A \longrightarrow B \quad K_c = 10$

$y \quad 2-y$

$\frac{[B]}{[A]} = \frac{2-y}{y} = 10$

$B \longrightarrow A \quad K = 1/10$

$\frac{[A]}{[B]} = \frac{1}{10}$

$B \longrightarrow A \quad \frac{1}{10}$

$2-y \quad y$

$\frac{[A]}{[B]} = \frac{y}{2-y} = \frac{1}{10}$

$\frac{2-y}{y} = 10$

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$[B] = 4$
$[A] = 2$

$B \longrightarrow A$

$$K_1 = \frac{[A]}{[B]} = \frac{2}{4} = \frac{1}{2}$$

$A \longrightarrow B$

$$\frac{[B]}{[A]} = \frac{4}{2} = 2 = K_2$$

$A \longrightarrow B \quad K = 10$

$B \longrightarrow A \quad K = 1/10$