Daily Tutorial Sheet-2	Level-1

16.(A) Equilibrium constant depends on temperature only.

17.(C) $K_c = \dfrac{[PCl_3]\,[Cl_2]}{[PCl_5]} = \dfrac{\frac{0.4}{4} \times \frac{0.4}{4}}{\frac{1.2}{4}} = \dfrac{0.4^2}{4 \times 1.2} = \dfrac{0.4}{12} = \dfrac{4}{10 \times 12} = 0.033$

18.(B) Let the total pressure at equilibrium be P

$$NH_2COONH_{4(s)} \rightleftharpoons \underset{\frac{2P}{3}}{2NH_{3(g)}} + \underset{\frac{P}{3}}{CO_{2(g)}}$$

$K_P = \dfrac{4P^3}{27} = 2.9 \times 10^{-5}$

$P^3 = \dfrac{27}{4} \times 2.9 \times 10^{-5} = 195 \times 10^{-6}$

Hence P = 0.0582

19.(B)

	$SO_2(g)$	+ $\frac{1}{2}O_2(g)$	$\rightleftharpoons$	$SO_3(g)$
t = 0	4	4		0
$t = t_{eq}$	2	3		2

20.(B) $K_p = K_c (RT)^{\Delta ng}$

Since Δn_g is –ve

$K_P = K_C (RT)^{+\Delta n_g}$

21.(B) Use $K_p = K_c (RT)^{\Delta ng}$

22.(C)

	A_2	+ B_2	$\rightleftharpoons$	2AB
Initial	1	2		0
at eqbm.	1 – x	2 – x		2x

$$50 = \frac{4x^2}{(1-x)(2-x)}$$

Amount of AB at equilibrium is 2x.

23.(D)

	A	+ B	$\rightleftharpoons$	C	+ D
Initial	100	100		0	0
At eqbm.	33.33	33.33		66.66	66.66

$K_c = 4$

24.(B) $K_P = \dfrac{K_C}{(RT)^2}$ Since $\Delta n_g = -2$ **25.(A)** K_c changes with temperature only **26.(A)** $K_p = P_{O_2}$

27.(D)

	A	+ B	$\rightleftharpoons$	C	+ D
at t = 0	a	a		0	0
$t = t_{eq}$	$\frac{2a}{3}$	$\frac{2a}{3}$		$\frac{a}{3}$	$\frac{a}{3}$

$K_C = \dfrac{1}{4} = 0.25$

28.(B) [Products] > [Reactants] $\Rightarrow$ K must be greater than 1

29.(C)

	$P_4(s)$	+ $6Cl_2(g)$ $\rightleftharpoons$	$4PCl_3(g)$
Initial	6	6	0
At equim.	5	0	4

At equim. $[P_4] > [PCl_3] > [Cl_2]$

30.(C)

	$N_2(g)$	+ $3H_2(g)$ $\rightleftharpoons$	$2NH_3(g)$
$t = 0$	1	3	0
$t = t_{eq}$	$1-x$	$3-3x$	$2x$

$1 - x = 0.6 \quad \Rightarrow \quad x = 0.4$

Total moles $= 4 - 2x = 3.2$