

### EQUILIBRIUM

1. 120 g of urea is dissolved in 5 litres. The active mass of urea is  
(a) 0.08      (b) 0.4      (c) 120/5      (d) 5/120
2. For the equilibrium  $A + B \rightleftharpoons C + D$ , equilibrium constant may be equal to  
(a)  $\frac{[C][A]}{[D][B]}$       (b)  $\frac{[A][B]}{[C][D]}$       (c)  $\frac{[C]+[D]}{[A]+[B]}$       (d) all wrong
3. For which of the following reactions,  $K_p$  may be equal to 0.5 atm?  
(a)  $2HI \rightleftharpoons H_2 + I_2$       (b)  $PCl_5 \rightleftharpoons PCl_3 + Cl_2$   
(c)  $N_2 + 3H_2 \rightleftharpoons 2NH_3$       (d)  $2NO_2 \rightleftharpoons N_2O_4$
- 4 Which of the following is correct?  
(a)  $K_p$  will always have some unit      (b)  $K_c$  will always have some unit  
(c.)  $K_x$  will never have any unit      (d) When  $\Delta n = 0$ ,  $K_p = K_c = K_x$  then all the three  $K_s$  have the same unit
5.  $K_p/K_c$  for the reaction  $CO + \frac{1}{2} O_2 \rightleftharpoons CO_2$  is  
(a)  $RT$       (b)  $1/\sqrt{RT}$       (c)  $\sqrt{RT}$       (d) 1
6. The vapour density of undecomposed  $N_2O_4$  is 46. When heated, the vapour density decreases to 24.5 due to its dissociation to  $NO_2$  percentage dissociation of  $N_2O_4$  at the final temperature is  
(a) 87      (b) 60      (c) 40      (d) 70
7. For the reaction  $C(s) + CO_2(g) \rightleftharpoons 2CO(g)$ , the partial pressures of  $CO_2$  and  $CO$  are respectively 4 and 8 atm.  $K_p$  for the reaction is  
(a) 16      (b) 2      (c) 0.5      (d) 4
8.  $K_c$  for  $A + B \rightleftharpoons C + D$  is 10 at  $25^\circ C$ . If a 2-litre vessel contains 1, 2, 3 and 4 moles of A, B, C and D respectively, at  $25^\circ C$ , the reaction shall  
(a) Proceed from left to right      (b) Proceed from right to left  
(c) Be at equilibrium      (d) Not occur
9. If pressure is applied to the equilibrium system of solid  $\rightleftharpoons$  liquid, the melting point of the solid  
(a) Will not change      (b) May increase or decrease depending upon its nature  
(c) Will always increase      (d) Will always decrease
10. If pressure is applied to the following equilibrium of liquid  $\rightleftharpoons$  vapour, the boiling point of the liquid  
(a) Will decrease      (b) Will increase  
(c) May increase or decrease      (d) Will not change