Model Question paper

Chemical Equilibrium - I 3

11th Standard

Chemistry

Reg.No. : | | | | | | |

I. Answer all the questions.

II. Use blue pen only.

Time : 01:00:00 Hrs

Total Marks : 42

Part - A

5 x 1 = 5

1) In which equilibrium pressure has no effect

(a) $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$ (b) $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$ (c) $2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$ (d) $NH_4Cl_{(g)} \rightleftharpoons NH_{3(g)} + HCl_{(g)}$

2) For the equilibrium $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$ the K_p and K_c value are related as

(a) $K_p=K_c(RT)$ (b) $K_p=K_c(RT)^2$ (c) $K_p=K_c(RT)^{-1}$ (d) $K_p=K_c(RT)^{-2}$

3) For endothermic equilibrium, increase in temperature changes the K_{eq} value as

(a) No change (b) Increases (c) Decreases

4) In the heterogeneous equilibrium $CaCO_{3(s)} \rightleftharpoons CaO_{(s)} + CO_{2(g)}$ the K_{eq} value is given by

(a) partial pressure of CO_2 (b) activity CaO (c) activities of $CaCO_3$ (d) [CaO]/[$CaCO_3$]

5) For the equilibrium reaction $H_2(g)+I_2(g) \rightleftharpoons 2HI_{(g)}$

(a) Kp=Kc (b) Kp>Kc (c) Kp<Kc (d) Kp=1/Kc

Part - B

3 x 2 = 6

6) Define law of mass action

7) Write the K_p expression for $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$

8) Relate K_p and K_c when $\triangle$n=0, $\triangle$n=1;$\triangle$n=2.0

Part - C

2 x 3 = 6

9) Give an example of irreversible reaction

10) Reason out why equilibrium concentrations remain constant.

Part - D

5 x 5 = 25

11) Differentiate irreversible and reversible reactions.

12) Explain the characteristics of a chemical equilibrium.

13) Write a note on heterogeneous equilibrium reaction.

14) Two moles of H_2 and three moles of I_2 are taken in 2 dm^3 vessels and heated. If the equilibrium mixture contains 0.8 moles of HI, calculate K_p and K_c for the reaction $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$

15) At 25°C. K_c for the reaction $3C_2H_{2(g)} + \rightleftharpoons C_6H_{6(g)}$ is 4.0.If the equilibrium concentration of C_2H_2 is 0.5 mol. lit^{-1}. What is the concentration of C_6H_6?

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