

CHEMISTRY

NCERT - FULL MARKS CHEMISTRY(TAMIL)

CHEMICAL EQUILIBRIUM - I

Problem

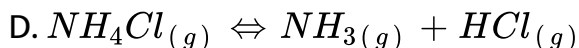
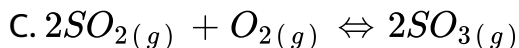
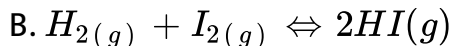
1. In the equilibrium reaction

$CO_{2(g)} + C_{(s)} \rightleftharpoons 2CO_{(g)}$ the partial pressure of CO_2 and CO are 0.78 atm and 1.22 atm respectively at equilibrium. Calculate the equilibrium constant

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Questions A Choose The Correct Answer

1. In which equilibrium pressure has no effect

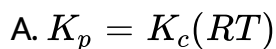


Answer:



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2. For the equilibrium $N_2O_4(g) \rightleftharpoons 2NO_2(g)$, the K_p and K_c values are related as



B. $K_p = K_c(RT)^2$

C. $K_p = K_c(RT)^{-1}$

D. $K_p = K_c = (RT)^{-2}$

Answer:



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3. In endothermic equilibrium reaction the increase in temperature _____

A. No change

B. Increases

C. Decreases

D. None of these

Answer:

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4. In the heterogenous 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. $[CaO] / [CaCO_3]$.

Answer:

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5. For the equilibrium reaction $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$

A. $K_p = K_c$

B. $K_p > K_c$

C. $K_p < K_c$

D. $K_p = 1/K_c$

Answer:



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Questions B Fill In The Blanks

1. In endothermic equilibrium reaction the increase in temperature _____



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2. When the reactant is a liquid which decomposes to gaseous products. Then the equilibrium is called as _____

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3. When reactants and products are in gaseous state, the equilibrium constant can be expressed in terms of

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4. Value of the equilibrium constant is _____ of the initial concentration of reactants.

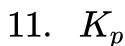
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5. According to law of mass action, the rate of a chemical reaction is proportional to _____ of reactants.

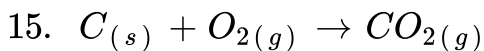
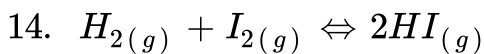
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Questions C Match The Following

1.



13. Rate of reaction



a. homogeneous equilibrium

b. active mass of reactants

c. irreversible reaction

d. Degree of dissociation

e. $K_C(RT)^{\Delta n}$

f. Heterogeneous equilibrium

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Questions D Write In One Or Two Sentence

1. State law of mass action.

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2. Write the K_p expression for $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$

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3. Relate K_p and K_c when $\Delta n = 0$, $\Delta n = 1$, $\Delta n = 2.0$

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4. Give an example of irreversible reaction

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5. Reason out why equilibrium concentrations remain constant.

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Questions E Explain Briefly On The Following

1. Differentiate irreversible and reversible reactions.

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2. Explain the characteristics of a chemical equilibrium.

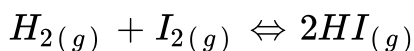
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3. Write a note on heterogeneous equilibrium reaction.

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4. Two moles of H_2 and three moles of I_2 are taken in $2dm^3$ vessel and heated. If the equilibrium mixture contains 0.8 moles of HI, calculate K_p and K_c for the reaction



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5. At $25^\circ C$, 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 $0.5 \text{ mol. lit}^{-1}$. What is the concentration of C_6H_6 ?

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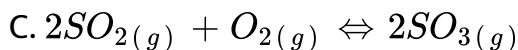
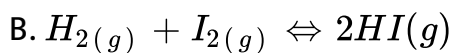
Question

1. In the equilibrium reaction

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2. In which equilibrium pressure has no effect



Answer:

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

A. $K_p = K_c(RT)$

B. $K_p = K_c(RT)^2$

C. $K_p = K_c(RT)^{-1}$

D. $K_p = K_c = (RT)^{-2}$

Answer:

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4. For endothermic equilibrium, increase in temperature changes the K_{eq} value as

- A. No change
- B. Increases
- C. Decreases
- D. None of these

Answer:

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5. In the heterogenous 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 $CaCO_3$
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Answer:

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Answer:

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7. In endothermic equilibrium reaction the increase in temperature _____

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8. When the reactant is a liquid which decomposes to gaseous products. Then the equilibrium is called as _____

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9. When reactants and products are in gaseous state, the equilibrium constant can be expressed in terms of

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10. Value of the equilibrium constant is _____ of the initial concentration of reactants.

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11. According to law of mass action, the rate of a chemical reaction is proportional to _____ of reactants.

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12.

11. K_p

12. $CaCO_3 \rightleftharpoons CaO_{(s)} + CO_{2(g)}$

13. Rate of reaction

14. $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$

15. $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)}$

a. homogeneous equilibrium

b. active mass of reactants

c. irreversible reaction

d. Degree of dissociation

e. $K_C(RT)^{\Delta n}$

f. Heterogeneous equilibrium

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13. State law of mass action.

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14. Write the K_p expression for $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$

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15. Relate K_p and K_c when $\Delta n = 0$, $\Delta n = 1$, $\Delta n = 2.0$

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17. Reason out why equilibrium concentrations remain constant.

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18. Differentiate irreversible and reversible reactions.

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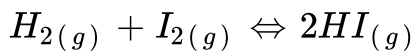
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