Chemical Equilibrium — Practice Test

Northwest Territories Chemistry 12 (MCH--12) • 10 questions

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1 **For $PCl_5 \rightleftharpoons PCl_3 + Cl_2$, starting with 0.80 mol/L PCl_5 only. At equilibrium $[PCl_3] = 0.20$ mol/L. The value of K_eq is approximately**

- A 0.033
- B 0.25
- C 0.067
- D 0.50

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2 **For $H_2 + Cl_2 \rightleftharpoons 2HCl$ + heat, cooling the mixture will**

A shift the equilibrium to the right, favouring HCl

B shift the equilibrium to the left

C leave the equilibrium position unchanged

D decrease K_eq to zero

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3 **For $2SO_2 + O_2 \rightleftharpoons 2SO_3$, increasing the pressure will shift the equilibrium to the**

A left, toward more moles of gas

B right, toward fewer moles of gas

C right, toward more moles of gas

D left, toward fewer moles of gas

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4 **For $CO + 2H_2 \rightleftharpoons CH_3OH$, adding more H_2 at equilibrium will**

A decrease the amount of CH_3OH

B increase the amount of CH_3OH formed

C leave the amount of CH_3OH unchanged

D decrease K_eq

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5 **If Q is greater than K_eq, the reaction will proceed to the**

A right, forming more products

B left, forming more products

C right, until Q rises further

D left, forming more reactants

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6 **When a stress is applied to a system at equilibrium, the system shifts to**

A increase the stress further

B stop both reactions

C partially counteract the stress

D change the temperature to zero

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7 **A catalyst speeds up the approach to equilibrium by**

A speeding both forward and reverse reactions equally

B speeding only the forward reaction

C speeding only the reverse reaction

D increasing the yield at equilibrium

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8

For $CaCO_3(s) \rightleftharpoons CaO(s) + CO_2(g)$, adding more solid $CaCO_3$ at equilibrium will

A increase the concentration of CO_2

B decrease the concentration of CO_2

C not change the equilibrium concentration of CO_2

D shift the equilibrium to the left

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9

For $A + B \rightleftharpoons C + D$, if [C] is 0.30, [D] is 0.30, [A] is 0.10, and [B] is 0.10, all in mol/L, K_eq is

A 3

B 6

C 12

D 9

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10 **Le Chatelier principle applies to systems that are**

A completely finished

B at equilibrium

C open to the air only

D at absolute zero

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ANSWER KEY

1.	C	**5.**	D	**9.**	D
2.	A	**6.**	C	**10.**	B
3.	B	**7.**	A		
4.	B	**8.**	C		

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