

Acid Unit: Equilibrium & Rates of Reaction

1. A sample of $\text{NO}_2(\text{g})$ is formed from its elements . Using the **smallest whole number coefficients** to balance the reaction, the correct expression for $K_{(\text{eq})}$ is _____

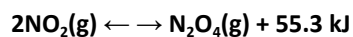
a	$\frac{[\text{NO}_2]^2}{[\text{N}_2] \times [\text{O}_2]^2}$
b	$\frac{[\text{N}_2] \times [\text{O}_2]^2}{[\text{NO}_2]^2}$
c	$\frac{[\text{NO}_2]^2}{[\text{N}_2]^2 \times [\text{O}_2]}$
d	$\frac{[\text{NO}] \times [\text{O}_2]^2 \times [\text{N}_2]^2}{3}$

2. The K_{eq} for a reaction is given as $K_{\text{eq}} = \frac{[\text{R}]^2 [\text{T}]}{[\text{X}]^3}$

This equilibrium constant is for the reaction _____

a	$2\text{R}(\text{g}) + \text{T}(\text{aq}) \leftarrow \rightarrow 3\text{X}(\text{g})$
b	$3\text{X}(\text{aq}) \leftarrow \rightarrow 2\text{T}(\text{aq}) + \text{R}(\text{g})$
c	$2\text{Q}(\text{aq}) + 3\text{X}(\text{g}) \leftarrow \rightarrow \text{T}(\text{g}) + 2\text{R}(\text{aq})$
d	$2\text{Q}(\text{s}) + 3\text{X}(\text{aq}) \leftarrow \rightarrow \text{T}(\text{g}) + 2\text{R}(\text{g})$

3. Consider the reaction below:



The correct equation for solving for the K_{eq} of this reaction is _____

a	$K_{\text{eq}} = \frac{[\text{N}_2\text{O}_4] \times 55.3}{[\text{NO}_2]^2}$
b	$K_{\text{eq}} = \frac{[\text{N}_2\text{O}_4]}{[\text{NO}_2]^2}$
c	$K_{\text{eq}} = \frac{[\text{NO}_2]^2}{[\text{N}_2\text{O}_4]}$
d	$K_{\text{eq}} = \frac{[\text{NO}_2]^2}{[\text{N}_2\text{O}_4] \times 55.3}$

4. A characteristic of an equilibrium system is _____

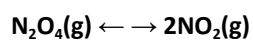
a	the presence of equal amounts of reactants and products
b	the completion of a chemical reaction when changes cease to occur
c	equal amounts of reactants and products entering and being removed from the system
d	the conversion of reactants to products occurring at the same rate as the conversion of products to reactants

5. Numerical response question

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Left justify your answer in the boxes provided.

Kailyn is going off to university in Los Angeles. To help her prepare, her classmates give her a Bottle-of-smog: a 100 mL glass tube that contains dinitrogen tetraoxide at equilibrium.



The tube is placed in boiling water where it turns a dark brown. At this temperature the K_c is 0.211. If the equilibrium concentration of $\text{N}_2\text{O}_4(\text{g})$ is 0.049 mol/L, then the equilibrium concentration of $\text{NO}_{2(\text{g})}$ will be $a.b \times 10^c$ mol/L

Solutions:

1. A
2. D
3. B
4. D
5. 321