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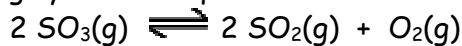
Last _____

First _____

Question 1

6 Points

Consider the following system at equilibrium where $\Delta H^\circ = 198 \text{ kJ}$, and $K_c = 2.90 \times 10^{-2}$, at 1150K.



When 0.27 moles of $\text{SO}_3(\text{g})$ are removed from the system at equilibrium at 1150K:

The value of K_c

Increases

Decreases

Remains the same

The value of Q

Is greater than K_c

Is less than K_c

Is equal to K_c

$[\text{SO}_2]$

Increases

Decreases

Remains the same

Question 2

6 Points

Consider the following system at equilibrium where $\Delta H^\circ = 16.1 \text{ kJ}$, and $K_c = 6.50 \times 10^{-3}$, at 298 K.



If the **TEMPERATURE** on the equilibrium system is suddenly **increased**:

The value of K_c

Increases

Decreases

Remains the same

The value of Q

Is greater than K_c

Is less than K_c

Is equal to K_c

$[\text{Br}_2]$

Increases

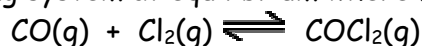
Decreases

Remains the same

Question 3

5 Points

Consider the following system at equilibrium where $K_c = 77.5$ and $\Delta H^\circ = -108 \text{ kJ/mol}$ at 600 K.



The **production of $\text{COCl}_2(\text{g})$ is favored by:**

Indicate **True (T)** or **False (F)** for each of the following:

a) **Decreasing the temperature.** _____

d) **Removing Cl_2 .** _____

b) **Decreasing the volume.** _____

e) **Decreasing the pressure** _____

c) **Removing COCl_2 .** _____

(by changing the volume).

Question 4

3 Points

a) What is the **conjugate acid** of HSO_4^- _____

b) What is the **conjugate base** of HSO_4^- _____

c) Write a **net ionic equation** to show that **ammonia** behaves as a **Brønsted-Lowry base** in water.

