

Chem12 Equilibrium : Quiz-80 (no eq. calculations)

1) A system will proceed to equilibrium in an attempt to achieve a balance between :

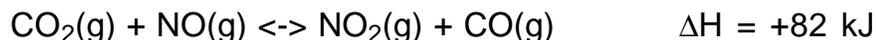
- a) maximum enthalpy and maximum entropy
- b) minimum enthalpy and minimum entropy
- c) maximum enthalpy and minimum entropy
- d) minimum enthalpy and maximum entropy

2) Consider the reaction : $\text{BaCO}_3(\text{s}) + \text{heat} \rightleftharpoons \text{BaO}(\text{s}) + \text{CO}_2(\text{g})$

Which of the following observations will indicate that the reaction has most likely achieved equilibrium ?

- a) The mass of the system becomes constant.
- b) The concentration of $\text{BaO}(\text{s})$ becomes constant.
- c) All of the $\text{BaCO}_3(\text{s})$ is consumed.
- d) The gas pressure of the system becomes constant.

3) Consider the following reaction at equilibrium :



Which procedure will cause this equilibrium to shift to the left ?

- a) A decrease in the temperature
- b) An increase in the temperature
- c) A decrease in the volume of the system
- d) An increase in the volume of the system

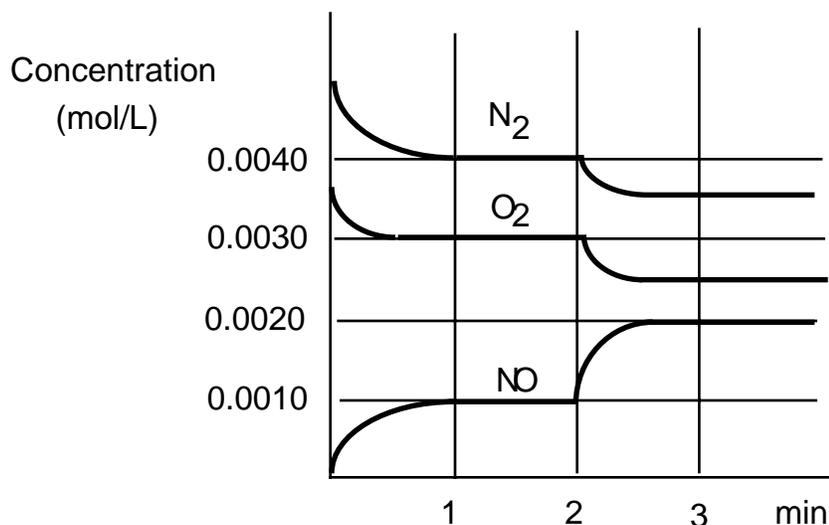
4) Quicklime (CaO), is produced from limestone (CaCO_3), according to the equilibrium reaction :



Which of the following procedures results in producing the maximum quantity of quicklime ?

- a) Lower the temperature and allow $\text{CO}_2(\text{g})$ to escape.
- b) Raise the temperature and allow $\text{CO}_2(\text{g})$ to escape.

Concentration/time graph obtained for the equilibrium system (all species gases)



8) What is the value of K_{eq} for the above reaction at time = 1 min. ?

- a) 8.3×10^{-2} b) 3.3×10^{-1} c) 1.2×10^1 d) 8.3×10^1

9) Which of the following procedures, at time = 2 min., could have caused the change shown on the above graph ?

- a) Some $\text{NO}(\text{g})$ was added.
 b) A catalyst was added.
 c) The pressure was decreased.
 d) The temperature was increased.

10) If only the container volume is increased, which of the following equilibria will shift toward the reactants ?

- a) $\text{N}_2\text{O}_4(\text{g}) \rightleftharpoons 2\text{NO}_2(\text{g})$
 b) $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$
 c) $4\text{NO}(\text{g}) + 6\text{H}_2\text{O}(\text{g}) \rightleftharpoons 4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g})$
 d) $2\text{NaHCO}_3(\text{s}) \rightleftharpoons \text{Na}_2\text{CO}_3(\text{s}) + \text{H}_2\text{O}(\text{g}) + \text{CO}_2(\text{g})$

Answers : 1) d, 2) d, 3) a, 4) b, 5) b, 6) c, 7) a, 8) a, 9) d, 10) c.