Assignment 3

Date: 2020-11-07, 23:48:17

Consider measurements of initial density (ρ) of 10% for the following table. Since the answer option "F" indicates that the response cannot be, and "I" indicates that the response can, use it to position as general by the third column.

<table>
<thead>
<tr>
<th>Value</th>
<th>True</th>
<th>False</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
<tr>
<td>8</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
<tr>
<td>10</td>
<td>F</td>
<td>I</td>
<td>F</td>
</tr>
</tbody>
</table>

1. A complex radical precipitation is being carried out with the following assumptions: initiation by thermal decomposition of initiator; steady-state and equal rate of propagating radicals, termination of reactions occur by Brownian coupling, and an excess of initiator. With all these factors, which will happen to the concentration of radicals as the reaction proceeds?

a. Both [M] and [R] increase
b. [M] increases, [R] decreases
c. [M] decreases, [R] increases
d. Both [M] and [R] decrease

2. A solution of 0.1 M NaOH and 0.1 M HCl in a gas phase reactor is heated at 50°C. How long will it take to saturate 0.5 M NaOH? Assume all reactants are in excess, and the reaction proceeds at equilibrium. (Show)

- A = 500 kJ/mol
- E = 50 kJ/mol

3. Be a solution thermally isolated from the radical reactions at steady state and let us follow the following reaction:

\[
\begin{align*}
R_1 + R_2 & \rightarrow R_3 \\
R_3 & \rightarrow R_1 + R_2
\end{align*}
\]

a. N = N_1 + N_2 + N_3
b. N_1 = N_2 + N_3
c. N_1 = N_3

4. Be a solution thermally isolated from the radical reactions at steady state and let us follow the following reaction:

\[
\begin{align*}
R_1 + R_2 & \rightarrow R_3 \\
R_3 & \rightarrow R_1 + R_2
\end{align*}
\]

a. N = N_1 + N_2 + N_3
b. N_1 = N_2 + N_3
c. N_1 = N_3

5. The following ions are in solution in a gas phase reactor at steady state. Which ions will be present in the solution?

- A: [A] = 0.1 M
- B: [B] = 0.1 M
- C: [C] = 0.1 M
- D: [D] = 0.1 M
- E: [E] = 0.1 M

6. A solution of 0.1 M NaOH and 0.1 M HCl in a gas phase reactor is heated at 50°C. How long will it take to saturate 0.5 M NaOH? Assume all reactants are in excess, and the reaction proceeds at equilibrium. (Show)

- A = 500 kJ/mol
- E = 50 kJ/mol

7. Be a solution thermally isolated from the radical reactions at steady state and let us follow the following reaction:

\[
\begin{align*}
R_1 + R_2 & \rightarrow R_3 \\
R_3 & \rightarrow R_1 + R_2
\end{align*}
\]

a. N = N_1 + N_2 + N_3
b. N_1 = N_2 + N_3
c. N_1 = N_3

8. A solution of 0.1 M NaOH and 0.1 M HCl in a gas phase reactor is heated at 50°C. How long will it take to saturate 0.5 M NaOH? Assume all reactants are in excess, and the reaction proceeds at equilibrium. (Show)

- A = 500 kJ/mol
- E = 50 kJ/mol

9. Be a solution thermally isolated from the radical reactions at steady state and let us follow the following reaction:

\[
\begin{align*}
R_1 + R_2 & \rightarrow R_3 \\
R_3 & \rightarrow R_1 + R_2
\end{align*}
\]

a. N = N_1 + N_2 + N_3
b. N_1 = N_2 + N_3
c. N_1 = N_3

10. Be a solution thermally isolated from the radical reactions at steady state and let us follow the following reaction:

\[
\begin{align*}
R_1 + R_2 & \rightarrow R_3 \\
R_3 & \rightarrow R_1 + R_2
\end{align*}
\]

a. N = N_1 + N_2 + N_3
b. N_1 = N_2 + N_3
c. N_1 = N_3

11. Be a solution thermally isolated from the radical reactions at steady state and let us follow the following reaction:

\[
\begin{align*}
R_1 + R_2 & \rightarrow R_3 \\
R_3 & \rightarrow R_1 + R_2
\end{align*}
\]

a. N = N_1 + N_2 + N_3
b. N_1 = N_2 + N_3
c. N_1 = N_3

12. A solution of 0.1 M NaOH and 0.1 M HCl in a gas phase reactor is heated at 50°C. How long will it take to saturate 0.5 M NaOH? Assume all reactants are in excess, and the reaction proceeds at equilibrium. (Show)

- A = 500 kJ/mol
- E = 50 kJ/mol

13. Be a solution thermally isolated from the radical reactions at steady state and let us follow the following reaction:

\[
\begin{align*}
R_1 + R_2 & \rightarrow R_3 \\
R_3 & \rightarrow R_1 + R_2
\end{align*}
\]

a. N = N_1 + N_2 + N_3
b. N_1 = N_2 + N_3
c. N_1 = N_3

14. A solution of 0.1 M NaOH and 0.1 M HCl in a gas phase reactor is heated at 50°C. How long will it take to saturate 0.5 M NaOH? Assume all reactants are in excess, and the reaction proceeds at equilibrium. (Show)

- A = 500 kJ/mol
- E = 50 kJ/mol

15. Be a solution thermally isolated from the radical reactions at steady state and let us follow the following reaction:

\[
\begin{align*}
R_1 + R_2 & \rightarrow R_3 \\
R_3 & \rightarrow R_1 + R_2
\end{align*}
\]

a. N = N_1 + N_2 + N_3
b. N_1 = N_2 + N_3
c. N_1 = N_3