Adding heat to the predominant configuration (the best answer is)

1. Raises the number of microstates in the PC
2. Lowers the number of microstates in the PC
3. Leaves the number of microstates unchanged
4. Raises the number of microstates more at low T than at high.

The predominant configuration is

1. 20/10/2/7
2. 20/5/1/0
3. 10/10/4/1
4. 20/2/2

A gas is expanded from 1 L to 10 L at constant T

1. The entropy of the gas is unchanged
2. The entropy of the gas decreases
3. The entropy of the gas increases
4. Nothing can be said about the entropy from this information

Liquid water evaporates at 25° C to produce water gas at 1 atm.

1. The entropy of the water increases
2. The entropy of the surroundings increases
3. The entropy of the universe increases
4. The enthalpy of the water decreases.

For the reaction

$$SO_3 = SO_2 + O$$

A. The enthalpy change

1. Is zero
2. Is positive
3. Is negative

B. The enthalpy change can be calculated from the enthalpy of formation of SO_3 and SO_2

1. T
2. F

C. The entropy change of the system is

1. Positive
2. Negative
3. Zero

D. The free energy change at low temperature is

1. Zero
2. Positive
3. Negative

E. The free energy change at high temperature is

1. Zero
2. Positive
3. Negative

For the reaction

$$BaCO_3(s) \;=\; BaO(s) \;+\; CO_2(g)$$

A. The free energy change is independent of pressure

1. T
2. F

B. The free energy change

1. Becomes more positive as T increases.
2. Becomes more negative as T increase.
3. Is independent of T

C. This process is not spontaneous at room temperature. Therefore

1. W_{PC} of the surroundings increases
2. W_{PC} of the surroundings decreases
3. BaO(s) is stable

D. An increase of the pressure of $CO_2(g)$ will, at equilibrium,

1. Produce more BaO(s)
2. Produce less BaO(s)
3. Not change the amount of BaO(s)

E. An increase in the amount of BaO(s) will, at equilibrium

1. Produce more $CO_2(g)$
2. Produce less $CO_2(g)$
3. Not change the amount of $CO_2(g)$

F. At equilibrium

1. $\Delta S^o = 0$
2. $\Delta G^o = 0$
3. $\Delta H^o = 0$
4. $\Delta G = 0$

G. When the pressure of $CO_2(g)$ is very small, the entropy change of the surroundings is:

1. Positive
2. Negative
3. Zero

H. When the pressure of $CO_2(g)$ is very large, the entropy change of the surroundings is:

1. Positive
2. Negative
3. Zero

I. When the pressure of $CO_2(g)$ is very small and the temperature is very large, the entropy change of the surroundings is:

1. Positive
2. Negative
3. Zero

J. When the pressure of $CO_2(g)$ is very small and the temperature is very low, the entropy change of the surroundings is:

1. Positive
2. Negative
3. Zero

The normal boiling point of a compound is the temperature at which

1. Little tiny bubbles form in the solution
2. The pressure of the gas above the solution is one atmosphere
3. The gas above the solution is in equilibrium with the liquid
4. All of the above

At the normal boiling point of a compound, the change in the indicated property (from liquid state to gaseous state) has the described property.

1. $\Delta G = 0$
2. $\Delta G^o = 0$
3. $\Delta H^o = 0$
4. Both 1 and 2
5. Both 2 and 3

There is no production of gas when ethyl acetate, $CH_3C(O))CH_2CH_3$, liquid is opened.

1. T
2. F

In the reaction

$$H^+(aq) + F^-(aq) = HF(aq)$$

the value of ΔG can be

1. Negative
2. Positive
3. Zero
4. All of the above

In the reaction

$$H^+(aq) + F^-(aq) = HF(aq)$$

the value of ΔG^o can be

1. Negative
2. Positive
3. Zero
4. All of the above