Kinetics and Equilibrium

CHEM

Name_____ Class_____ Date_____

1 Which **statement** best describes a chemical reaction in which **energy is released**?

A It is exothermic and has a negative ΔH.
B It is exothermic and has a positive ΔH.
C It is endothermic and has a negative ΔH.
D It is endothermic and has a positive ΔH.

2 Which compound forms **spontaneously** from its elements at 1 atm and 298 K?

A $C_2H_2(g)$
B $C_2H_4(g)$
C $HF(g)$
D $HI(g)$

3 A solute is added to water and a portion of the solute remains undissolved. When **equilibrium** between the dissolved and undissolved solute is reached, the solution

4 Given the system at equilibrium:

$$H_2(g) + F_2(g) \rightleftharpoons 2HF(g) + \text{heat}$$

Which change will **not** shift the point of

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7

A a decrease in the activation energy
B an increase in the activation energy
C a decrease in the heat of reaction
D an increase in the heat of reaction

When equilibrium is reached in this system, the **rate of the forward reaction** is

A less than the rate of the reverse reaction
B greater than the rate of the reverse reaction
C equal to the rate of the reverse reaction
D unrelated to the rate of the reverse reaction

9 Given the reaction at equilibrium:

$$2A(g) + 3B(g) \rightleftharpoons A_2B_3(g) + \text{heat}$$

Which change will **not** affect the equilibrium concentrations of $A(g)$, $B(g)$, and $A_2B_3(g)$?

A adding more $A(g)$
B adding a catalyst
C increasing the temperature
D increasing the pressure

10 The **change** in the free energy of a reaction (ΔG) is equal to

A $T\Delta H - \Delta S$
B $T\Delta H + \Delta S$
C $\Delta H - T\Delta S$
D $\Delta H + T\Delta S$

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A

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5

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7

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A

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C

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