



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1

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

- A It is exothermic and has a negative  $\Delta H$ .
- B It is exothermic and has a positive  $\Delta H$ .
- C It is endothermic and has a negative  $\Delta H$ .
- D It is endothermic and has a positive  $\Delta H$ .

2

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

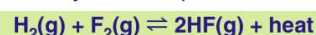
- A  $C_2H_2(g)$
- B  $C_2H_4(g)$
- C  $HF(g)$
- D  $HI(g)$

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:



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

5



## PREVIEW

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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:



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 ( $\Delta G$ ) 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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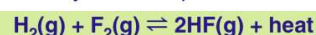
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