

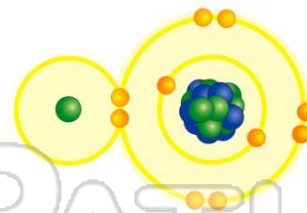


Name _____ Class _____ Date _____

- 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 .

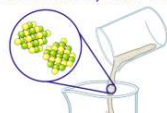
- 2 Which compound forms **spontaneously** from its elements at 1 atm and 298 K?

- 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 must be

- A dilute
- B saturated
- C
- D



- 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 equilibrium?

- A changing the pressure
- B changing the temperature



PREVIEW

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- 7
- B an increase in the activation energy
 - C a decrease in the heat of reaction
 - D an increase in the heat of reaction

- 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 $\Delta H + T\Delta S$



ANSWER KEY

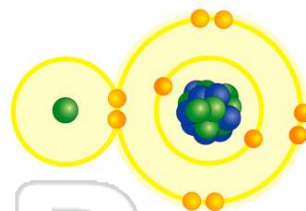
Which **statement** best describes a chemical reaction in which **energy is released**?

- 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 .

(a)

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 $HI(g)$



(c)

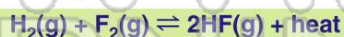
A solute is added to water and a portion of the solute remains undissolved. When **equilibrium** between the dissolved and undissolved solute is reached, the solution must be

- A dilute
- B saturated
- C unsaturated
- D



(b)

Given the system at equilibrium:



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

- A changing the pressure
- B changing the temperature
- C changing the concentration of $H_2(g)$
- D

(a)



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D an increase in the heat of 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

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

(b)

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 $\Delta H + T\Delta S$

(c)