

Name:

## MC Practice #5

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1. Which compound has both ionic and covalent bonds?  
(A)  $\text{CO}_2$  (B)  $\text{CH}_3\text{OH}$  (C)  $\text{NaI}$  (D)  **$\text{Na}_2\text{CO}_3$**
2. A cylinder with a movable piston contains a sample of gas having a volume of 6.0 liters at 293 K and 1.0 atmosphere. What is the volume of the sample after the gas is heated to 303 K, while the pressure is held at 1.0 atmosphere?  
(A) 9.0 L (B) **6.2 L** (C) 5.8 L (D) 4.0 L
3. What is the minimum amount of heat required to completely melt 20.0 grams of ice at its melting point?  
(A) 20.0 J (B) 83.6 J (C) **6,680 J** (D) 45,200 J
4. As the temperature of a chemical reaction in the gas phase is increased, the rate of the reaction increases because  
(A) fewer particle collisions occur  
(B) **more effective particle collisions occur**  
(C) the required activation energy increases  
(D) the concentration of the reactants increases
5. The entropy of a sample of  $\text{CO}_2$  increases as the  $\text{CO}_2$  changes from  
(A) gas to liquid (B) gas to solid  
(C) liquid to solid (D) **solid to gas**
6. Which two factors must be equal when a chemical reaction reaches equilibrium?  
(A) the concentration of the reactants and the concentration of the products  
(B) the number of reactant particles and the number of product particles  
(C) **the rate of the forward reaction and the rate of the reverse reaction**  
(D) the mass of the reactants and the mass of the products
7. Which formula represents an unsaturated hydrocarbon?  
(A)  $\text{C}_5\text{H}_{12}$  (B)  $\text{C}_6\text{H}_{14}$  (C)  $\text{C}_7\text{H}_{16}$  (D)  **$\text{C}_8\text{H}_{14}$**
8. The reaction between an organic acid and an alcohol produces  
(A) an aldehyde (B) a ketone  
(C) an ether (D) **an ester**
9. Which balanced equation represents a redox reaction?  
(A)  $\text{AgNO}_3(\text{aq}) + \text{NaCl}(\text{aq}) \rightarrow \text{AgCl}(\text{s}) + \text{NaNO}_3(\text{aq})$   
(B)  $\text{H}_2\text{CO}_3(\text{aq}) \rightarrow \text{H}_2\text{O}(\ell) + \text{CO}_2(\text{g})$   
(C)  $\text{NaOH}(\text{aq}) + \text{HCl}(\text{aq}) \rightarrow \text{NaCl}(\text{aq}) + \text{H}_2\text{O}(\ell)$   
(D)  **$\text{Mg}(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{MgCl}_2(\text{aq}) + \text{H}_2(\text{g})$**
10. A solution with a pH of 2.0 has a hydronium ion concentration ten times greater than a solution with a pH of  
(A) 1.0 (B) 0.20 (C) **3.0** (D) 20
11. Which isotope is used to treat cancer?  
(A) C-14 (B) U-238 (C) **Co-60** (D) Pb-206
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**Answer Key**  
**SPARK: MC Practice #5**

1. **D**
  2. **B**
  3. **C**
  4. **B**
  5. **D**
  6. **C**
  7. **D**
  8. **D**
  9. **D**
  10. **C**
  11. **C**
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