

## Chapter 3 Quiz (32 Points)

### True/False Questions (10 Points)

1. **True/False:** Matter is anything that has mass and takes up space.  
**Point Value:** 1
2. **True/False:** Amorphous solids have a well-defined, repeating structure.  
**Point Value:** 1
3. **True/False:** Boiling is an example of a phase transition from gas to liquid.  
**Point Value:** 1
4. **True/False:** A homogenous mixture means that the composition is uniform throughout.  
**Point Value:** 1
5. **True/False:** Rusting of iron is a physical change.  
**Point Value:** 1
6. **True/False:** An element can be decomposed into simpler substances.  
**Point Value:** 1
7. **True/False:** During a chemical reaction, mass is conserved quantitatively according to the Law of Conservation of Mass.  
**Point Value:** 1
8. **Question:** During a physical change, a substance changes its identity.  
**Point Value:** 1
9. True or False: Compounds can be separated into their elements by physical means.  
**Point Value:** 1
10. True or False: 1 calorie is equivalent to 4.184 joules.  
**Point Value:** 1

### Multiple Choice Questions (22 Points)

1. **Which of the following is a phase transition from solid to gas without passing through the liquid phase?**  
A) Melting  
B) Sublimation  
C) Freezing  
D) Deposition  
**Point Value:** 2
2. **Which of the following best describes a heterogeneous mixture?**  
A) A mixture that is uniform in composition  
B) A mixture with a fixed composition  
C) A mixture where the components can be visibly distinguished  
D) A mixture of two or more elements chemically combined  
**Point Value:** 2

3. Which type of energy is associated with objects in motion?

- A) Potential energy
- B) Kinetic energy
- C) Thermal energy
- D) Chemical energy

**Point Value:** 2

4. Convert 25 °C to Kelvin.

- A) 298.15 K
- B) 398.15 K
- C) 299.25 K
- D) 293.15 K

**Point Value:** 2

5. Which of the following is a crystalline solid?

- A) Plumbers Putty
- B) Salt
- C) Rubber
- D) Gelatin

**Point Value:** 2

6. In a thermochemical reaction, 50 grams of water (H<sub>2</sub>O) are heated from 25°C to 75°C. What is the amount of heat energy (q) absorbed by the water in this process?

- A) 14,460 J
- B) 12,540 J
- C) 10,460 J
- D) 15,710 J

**Point Value:** 2

7. A weather report states that the temperature outside is 77°F. What is this temperature in Celsius?

- A) 20°C
- B) 25°C
- C) 27°C
- D) 30°C

**Point Value:** 2

8. A scientist recorded a temperature of 98.6°F during an experiment. Convert this temperature to Kelvin.

- A) 309.2 K
- B) 310.2 K
- C) 312.2 K
- D) 299.2 K

**Point Value:** 2

9. If a particular process is endothermic, the reverse process must be a (an)

- A) chemical change
- B) isothermal process
- C) exothermic process
- D) endothermic process

**Point Value:** 2

10. A 15.0 gram lead ball at 25.0°C was heated with 40.5 joules of heat. Given the specific heat of lead is 0.128 J/g·°C, what is the final temperature of the lead? (2 Point)
- A) 21.1°C
  - B) 46.1°C
  - C) 77.8°C
  - D) 0.844°C

**Point Value:** 2

11. Zinc reacts with hydrochloric acid to produce zinc chloride and hydrogen gas. If you produce 2.30 g of zinc chloride and 0.23 grams of hydrogen from 1.73 g of zinc, how many grams of hydrochloric acid was required?
- A) 3.80 g
  - B) 4.26 g
  - C) 0.31 g
  - D) 0.80 g

**Point Value:** 2