

REVIEW QUESTIONS

Chapter 3

1. Classify the following properties of sodium metal as *physical* or *chemical*:

- a) silver metallic color \_\_\_\_\_
- b) turns grey in air \_\_\_\_\_
- c) melts at 98°C \_\_\_\_\_
- d) reacts explosively with chlorine \_\_\_\_\_
- e) dissolves in water to produce a gas \_\_\_\_\_
- f) malleable (can be shaped) \_\_\_\_\_

2. Classify the following changes as *physical* or *chemical* :

- a) steam condenses to a liquid on a cool surface \_\_\_\_\_
- b) baking soda dissolves in vinegar, producing bubbles \_\_\_\_\_
- c) moth balls gradually disappear at room temperature \_\_\_\_\_
- d) when a can of soda is opened bubbles form \_\_\_\_\_

3. Complete each statement below by choosing a suitable word or phrase:

- a) At the beach, sand is hotter than water in the day because it has a (higher/lower) specific heat.
- b) Changes that do not involve a change in composition are called (physical/chemical) changes,
- c) When water freezes to ice, energy is (absorbed/released)
- d) For all substances, heat of fusion is (lower/greater) than heat of vaporization.

4. How many calories of heat are required to heat 45 g of water from 12°C to 76°C? (Specific heat of water = 1.0 cal/g°C)
  
  
  
  
  
  
  
  
  
  
5. A sample of oxygen weighing 18 g was heated in presence of nitrogen and a chemical change occurred. The product was found to have a mass of 56 g. How much nitrogen reacted in this reaction?
  
  
  
  
  
  
  
  
  
  
6. A sample of gold weighing 15 g requires 84 calories of heat to increase its temperature from 35°C to 215°C. Calculate the specific heat of gold.
  
  
  
  
  
  
  
  
  
  
7. How much heat (in kcal) is required to melt a 20.0 lb bag of ice at 0°C? (Heat of fusion of ice = 80.0 cal.g)

8. When 2.0 kg of dry ice sublimates at its normal sublimation point, it absorbs 94 kcal of heat. Calculate the heat of sublimation for dry ice in cal/g.
9. How many calories of heat are required to heat 85.0 g of water at 30.0°C to steam at 100.0°C? (Specific heat of water = 1.00 cal/g°C; heat of vaporization of water = 540 cal/g)