

Chapter 4 – Practice Quiz

1. Butane is a gas at room temperature (25 °C). The boiling point of butane is probably greater than 25 °C.

- a. True
- b. False

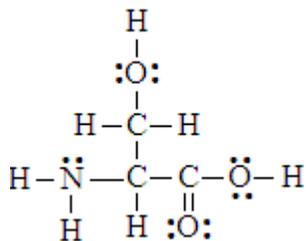
2. The specific heat of ice is 0.480 cal/g°C. How much heat will it take to raise the temperature of 22.50 g of ice from -30.0 °C to -20.0°C?

- a. 108 cal
- b. 216 cal
- c. 324 cal
- d. 469 cal

3. Oxygen and helium are present in a diver's tank. If the pressure of oxygen is 152 torr and that of helium is 2888 torr, what is the total pressure in atm?

- a. 1.00 atm
- b. 0.500 atm
- c. 2.00 atm
- d. 2.50 atm
- e. 4.00 atm

4. Below is the structure of the amino acid, serine. Four hydrogen atoms in the compound can form hydrogen bonds.



- a. True
- b. False

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5. Which of the following increases as temperature increases?
- kinetic energy
 - attractive forces
 - potential energy
 - none of the above
6. Which of the following best describes the relationship of molecules in a liquid with those in a gas at the same temperature?
- Molecules in the liquid are much closer together than those in the gas.
 - Molecules in the liquid have more kinetic energy than those in the gas.
 - Both a and b are correct.
 - Neither a or b are correct.
7. (Used in practice quiz 4) At high altitudes atmospheric pressure is lower than at sea level. Which of the following is true?
- Boiling water is cooler in Denver than in New York.
 - Boiling water is hotter in Denver than in New York.
 - Water boils at the same temperature in Denver and New York.
 - We cannot predict the relationship between the boiling points in the two cities.
8. Which of the following phase changes does not involve a solid?
- evaporation
 - melting
 - sublimation
 - freezing

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9. On a stove we have two pots of water at the boiling point. Pot 1 contains 1 L of water and pot 2 contains 2 L of water. Which of the following statements is true?

- a. Pot 2 is at a higher temperature than pot 1.
- b. Pot 2 has a larger thermal energy content than pot 1.
- c. Both have the same thermal energy content.
- d. Both a and b are true.

10. How much heat is needed to melt 15 g of ice? The heat of fusion of ice is 80 cal/g.

- a. 80 cal
- b. 15 cal
- c. 800 cal
- d. 1200 cal

11. Which of the following does not affect the boiling point of a liquid?

- a. the formula weight of the liquid molecules
- b. the shape of the liquid molecules
- c. the intermolecular forces between the liquid molecules
- d. All of the above affect the boiling point.

12. Which of the following molecules cannot engage in hydrogen bonding?

- a. CH₄
- b. NH₃
- c. H₂O
- d. All of them can hydrogen bond.

13. When alcohol is mixed with water which is the solvent?

- a. the alcohol
- b. the water
- c. The substance present in larger amount.
- d. The substance present in smaller amount.

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14. The addition of methanol (CH_3OH) to water can be illustrated as shown below.

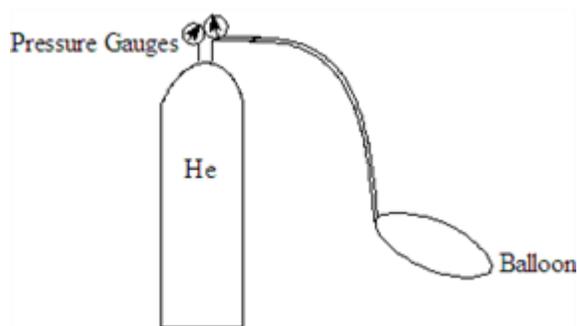


Based on this image, methanol would be classified as

- a. an electrolyte.
- b. a strong electrolyte.
- c. a weak electrolyte.
- d. a nonelectrolyte
- e. both an electrolyte and a weak electrolyte.
- f. both an electrolyte and a strong electrolyte.

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Helium (He) is used to fill balloons and is stored in a metal cylinder with pressure gauges on the top.

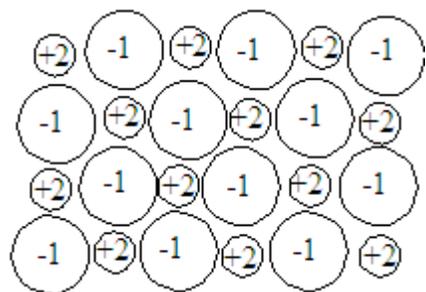


For each of the following changes, fill the blank with one of the following terms to describe what happens to the pressure reading on the gauge.

- increases
- decreases
- remains constant

16. Sun shines on the cylinder and warms it, the pressure reading _____.

In the following sentences, fill in the blanks with the appropriate terms from the list below.



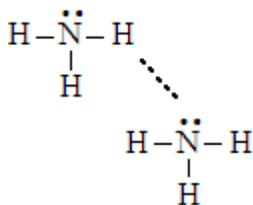
- high
- low
- electrolyte
- nonelectrolyte
- ion-ion attraction
- dipole-dipole attraction
- hydrogen bond
- dispersion force

17. _____ is the type of force present between the particles shown in the image.

18. The melting point of a solid composed of the particles shown in the image will be _____.

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Consider the image given below of a pair of ammonia molecules. Complete the following sentences using the appropriate terms listed below.



covalent bond
hydrogen bond
ion-dipole attraction
donor
acceptor

19. Each **solid** line in the figure represents a _____.

20. The **dashed** line in the figure represents a _____.

Answer key

1. False
2. a
3. e
4. true
5. a
6. a
7. a
8. a
9. b
10. d
11. d
12. a
13. c
14. d
15. removed from practice quiz
16. increases
17. ion-ion interaction
18. high
19. covalent bond
20. hydrogen bond