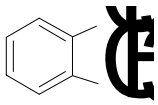
1. Which of the following formulas could represent an alkyne?

   d. C_5H_8

2. The formula for the following compound is



   d. C_8H_{10}

3. A straight-chain alkene has six carbon atoms. Its molecular formula is

   d. C_6H_{12}

4. Which functional group does **not** contain an oxygen atom?

   c. alkene

5. Which of the following functional groups contains a C = O linkage?

   d. amides

6. When a primary alcohol is oxidized, the initial product is an

   c. aldehyde.

7. Nylon-6,6 can be produced from the condensation polymerization of a diacid with six carbon atoms and a diamine with six carbon atoms. Nylon is classified as a

   d. polyamide.

8. Rank 355 torr, 0.524 atm, and 0.513 bar in increasing order of pressure.

   d. 355 torr < 0.513 bar < 0.524 atm

9. Avogadro stated that equal volumes of gases under the same conditions of temperature and pressure have equal

   a. numbers of molecules.

10. What volume of CH_4 at 0 ºC and 1.00 atm contains the same number of molecules as 0.50 L of N_2 measured at 27 ºC and 1.50 atm?

   c. 0.68 L

11. What is the chemical formula of a gas if it has a pressure of 1.40 atm and a density of 1.82 g/L at 27 ºC?

d. O_2

12. The volume of a certain gas sample is 235 mL when collected over water at a temperature of 25 ºC and a pressure of 698 mmHg. What will be the volume of this gas sample when measured dry at standard pressure? The vapor pressure of water at this temperature is 23.8 mmHg.

b. 208 mL

13. At a particular temperature, which of the following molecules has an average velocity closest to that of ethylene, C_2H_4, at the same temperature?

a. N_2

14. For a given sample of gas molecules, the average kinetic energy depends only on the value of the

b. temperature.

15. At room temperature, which of the following compounds has the strongest interparticle forces?

c. NaCl

16. Which of the following would be expected to have the highest melting point?

c. $MgCl_2$

The following question pertains to lead (atomic mass of 207.2 g/mol) which crystallizes in a face-centered cubic arrangements. Lead has an atomic radius of 1.75×10^{-8} cm.

17. What is the density of lead in g/cm^3?

b. 11.4 g/cm^3

The following question pertains to gold (atomic mass 197.0 g/mol) which crystallizes in a face-centered cubic arrangement with the atoms touching along the face diagonal. A gold atom has a radius of 1.44×10^{-8} cm.

18. How many gold atoms are there per unit cell?

c. 4

19. The sublimation of solid carbon dioxide, dry ice, is an example of

    e. a physical change.

20. An atom that is shared equally between eight cubic unit cells is called

    c. a corner atom.