

CH 121

General Chemistry Examination 4 April 19, 2002

KEY

Name: _____
(please print)

SSN: * * * - * * -
(last 4 digits)

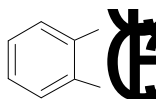
There are 20 Questions. Each question is worth 1 point.
Circle your answer **clearly**; otherwise no credit will be given.
Circle only **one** answer. If you circle two or more, you will receive no credit.

$R = 0.082057 \text{ L}\cdot\text{atm}/\text{K}\cdot\text{mol}$

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. $355 \text{ torr} < 0.513 \text{ bar} < 0.524 \text{ atm}$

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 $0^\circ C$ and 1.00 atm contains the same number of molecules as 0.50 L of N_2 measured at $27^\circ C$ 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 °C?
- d. O₂
12. The volume of a certain gas sample is 235 mL when collected over water at a temperature of 25 °C 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, C₂H₄, at the same temperature?
- a. N₂
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. MgCl₂

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/cm³?
- b. 11.4 g/cm³

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.