

NAME \_\_\_\_\_

**Chemistry/Physics 125**  
**TEST 3 Spring 2005**

- T F 1 Kinetic energy depends on mass, location and speed
- T F 2. Ionic bonding involves sharing a pair of protons.
- T F 3. An atom becomes an anion by gaining one or more electrons.
- T F 4. A solution may have more than one solute.
- T F 5. In a chemical equation, the products are found on the left side of the arrow.
- T F 6. When balancing a chemical equation, the number of hydrogen atoms in  $4 \text{C}_2\text{H}_4$  is sixteen.
- T F 7. The breaking and making of chemical bonds can explain chemical reactions and energy changes.
- T F 8. Elements in the same vertical column of the periodic table exhibit similar chemical properties.
- T F 9. On the modern Periodic Table the elements are ranked by their mass number.
- T F 10. As one goes from top to bottom in a group on the Periodic Table, the atoms get larger.
- T F 11. Most elements on the Periodic table are non-metals.
- T F 12. The vertical groupings on the Periodic Table are called periods.
13. What type of energy is stored in an electric battery?  
A. potential B. kinetic C. heat D. chemical
14. How many Joules of energy are stored in a candy bar which contains 200 food calories?  
A. 200000 B. 200 J C. 840 kJ D. 420000 J

15. The incorrect chemical formula among the following is  
A.  $\text{LiBr}_2$                       B.  $\text{MgO}$                       C.  $\text{Na}_2\text{S}$                       D.  $\text{BeO}$
16. Atoms of an element tend to gain or lose electrons so that they will  
A. Have the same number of protons as electrons.  
B. Have the same number of outer shell electrons as the nearest noble gas.  
C. Have the same outer shell arrangement as a metal.  
D. Become electrically neutral.
17. Which of the following is closest to a hectosecond?  
A. minute                      B. hour                      C. day                      D. year
18. Which of the following statements about elements in a chemical family is false?  
A. They have the same number of outer shell electrons  
B. They exist in the same physical state (solid, liquid or gas).  
C. They tend to gain, lose or share the same number of electrons.  
D. They react in a similar manner with a given element.
19. When involved in a chemical reaction with metals, atoms of a non-metal tend to:  
A. Exchange protons.                      B. Remain neutral.  
C. Gain electrons.                      D. Lose electrons.
20. Potassium (K) reacts with oxygen (O) to form  $\text{K}_2\text{O}$ , an ionic compound. How many electrons did an atom lose during the reaction?  
A. Each potassium atom lost two electrons.  
B. Each potassium atom lost one electron.  
C. Each oxygen atom lost one electron.  
D. Each oxygen atom lost two electrons.
21. In a covalently bonded compound, you would find atoms that  
A. Have lost electrons to become ions.  
B. Have gained electrons to become ions.  
C. Are sharing at least one pair of protons.  
D. Are sharing at least one pair of electrons.
22. Evidence of a chemical reaction includes  
A. A color change                      B. A change in temperature  
C. The production of a gas                      D. All of these
23. Atoms that are in the IIA family would tend to  
A. Form 1+ ions                      B. Be very unreactive.  
C. Form 2+ ions.                      D. Form negative ions.

24. The element M reacts with oxygen to form a stable ionic compound  $M_2O_3$ . If M were allowed to react with bromine, the resulting compound would have the formula:

- A.  $MBr$ .
- B.  $MBr_3$ .
- C.  $MBr_2$ .
- D. Not enough information given to tell

25. Which combination of elements results in the formation of a white crystalline solid that dissolves to form a solution that does not conduct electricity?

- A. Metal and metal
- B. Non-metal and non-metal
- C. Metal and non-metal
- D. Metal and metalloid

26. When hydrocarbons burn with excess  $O_2$  they

- A. Produce  $CO_2$  and  $H_2O$ .
- B. Produce  $CO$ , but never  $H_2O$ .
- C. Sometimes give off  $H_2O$ , but never  $CO_2$ .
- D. Produce  $CO$  and  $H_2O$ .

27. The strength of the ionic bond comes principally from:

- A. The sharing of a pair of electrons
- B. The sharing of a pair of protons
- C. Transfer of protons
- D. The mutual attraction of opposite electrical charges

28. Water solutions of ionic substances that conduct electricity are called

- A. Electrical solutions
- B. Polar solutions
- C. Electrolytes
- D. Indicators

29. An ion is

- A. Another term for an atom
- B. A molecule such as sugar
- C. An atom or group of atoms that has an electrical charge
- D. Another term for an electron

30. If  $C_8H_{12}$  reacts with excess  $O_2$  the coefficient in front of the  $O_2$  in the balanced chemical equation would be:

- A. 7
- B. 8
- C. 11
- D. 14

31. Anions are:

- A. Positively charged ions
- B. Formed by the combination of electrons with neutrons
- C. Atoms that carry no net electrical charge
- D. Negatively charged ions

32. Bases turn phenolphthalein:

- A. Blue
- B. Red
- C. Green
- D. Blue/Black