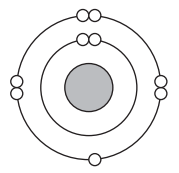
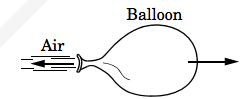
Unit 4 – Spring 2015

1. This diagram represents a neutral atom of fluorine-19.   
      
   Which best describes the structure of fluorine-19?
   1. 2 electrons in the first energy level; 7 electrons in the second energy level
   2. 2 electrons in the first energy level; 8 electrons in the second energy level
   3. 9 protons and 9 neutrons in the nucleus
   4. 10 protons and 9 neutrons in the nucleus
2. An object has a mass of 12.8 kg and a velocity of 8.4 m s. What is the kinetic energy of the object?
   1. 53.8 J
   2. 107.5 J
   3. 451.6 J
   4. 903.2 J
3. How much potential energy does a 55-kg person gain when she walks to the top of a hill 20 m tall? A
   1. 75 J
   2. 539 J
   3. 1,100 J
   4. 10,780
4. Which scientist constructed the model of the atom that included electron energy levels?
   1. Bohr
   2. Lewis
   3. Newton
   4. JJ Adams
5. What happens to the kinetic and gravitational potential energy of a skydiver during free-fall?
   1. Kinetic energy decreases; Potential energy increases
   2. Both kinetic and potential energy increase
   3. Both kinetic and potential energy increase
   4. Kinetic energy increases; Potential energy decreases
6. What happens to the mechanical energy of a skydiver during free-fall
   1. Mechanical increases
   2. Mechanical energy remains the same
   3. Mechanical energy decreases
   4. Mechanical energy is multiplied by 1/2
7. This diagram represents a balloon that is moving in one direction while escaping air is moving in the opposite direction. What causes the balloon to move?  
    
   1. Action-reaction forces
   2. Gravitational potential energy
   3. Electrical energy
   4. Friction
8. A ball with a mass of 5kg is dropped from a resting position of 10m above the ground. What is the potential energy of the ball just before it is dropped?
   1. 0 J
   2. 49 J
   3. 490 J
   4. 98 J
9. Reactivity for metals
   1. Increases going up a family and right across a period
   2. Decreases going down a family and right across a period
   3. Decreases going down a family and left across a period
   4. Increases going down a family and left across a period
10. Which best represents how electrons are arranged in the energy levels of a carbon atom?
    1. First energy level = 3 electrons   
       second energy level = 3 electrons
    2. First energy level = 4 electrons   
       second energy level = 2 electrons
    3. First energy level = 2 electrons   
       second energy level = 4 electrons
    4. First energy level = 1 electron  
       second energy level = 5 electrons
11. Which of the following could be used to convert light energy to electrical energy?
    1. A windmill
    2. A chemical storage battery
    3. A solar cell
    4. Rotating coils in a magnetic field
12. Which of the following situations violates the law of conservation of energy?
    1. A ball dropped from the top of a building increases in speed until it hits the ground.
    2. A block sliding freely on level ice increases in speed until it hits a wall.
    3. A child playing on a swing moves fastest at the bottom of the swing’s path.
    4. The height a ball bounces decreases with each bounce.
13. The stored energy in a battery can BEST be described as
    1. Thermal
    2. Chemical
    3. Nuclear
    4. Kinetic
14. The number of protons in a neutral atom is equal to the number of
    1. Electrons
    2. Neutrons
    3. Ions
    4. Isotopes
15. All energy starts as
    1. Kinetic
    2. Mechanical
    3. Potential
    4. Chemical
16. Reactivity for nonmetals
    1. Decreases as you go down a family and left across a period
    2. Increases as you go down a family and right across a period
    3. Decreases as you go up a family and left across a period
    4. Increases as you go up a family and right across a period
17. I’m screaming at the bottom of the first big hill of Carowinds’ new Gigacoaster. What type of energy am I experiencing?
    1. Kinetic
    2. Thermal
    3. Electrical
    4. Potential
18. Why is height and weight important for the thrill in the bungee jump simulators
    1. The simulator works off mechanical energy
    2. The simulator uses the buildup of potential energy
    3. The simulator works off solar energy
    4. The simulator uses chemical energy
19. Which energy conversion correctly shows the law of conservation of energy?
    1. 
    2. 
    3. 
    4. 
20. Which energy deals with visible light, gamma rays, and ultraviolet radiation
    1. Nuclear
    2. Thermal
    3. Electromagnetic
    4. Chemical
21. This type of energy deals with the flow/movement of electrons
    1. Electrical
    2. Thermal
    3. Chemistry
    4. Mechanical
22. Which metal is MOST reactive?
    1. Be
    2. Ca
    3. Tl
    4. C
23. Burning coal and exothermic reactions are examples of
    1. Mechanical
    2. Potential
    3. Chemical
    4. Electromagnetic
24. When dealing with thermal energy, a cold object will have
    1. Many atoms
    2. Slow moving atoms
    3. Fast moving atoms
    4. No atoms at all
25. What are the three types of potential energy
    1. Gravitational, elastic, chemical
    2. Thermal, elastic, electromagnetic
    3. Gravitational, kinetic, mechanic
    4. Thermal, chemical, electrical
26. Which nonmetal is most UNREACTIVE
    1. F
    2. S
    3. Kr
    4. N
27. A rubber band is an example of
    1. Elastic potential energy
    2. Electromagnetic energy
    3. Mechanical energy
    4. Thermal energy
28. How many electrons can the 5th energy level (or shell) hold if it is not the outside level.
    1. 25
    2. 32
    3. 5
    4. 8
29. What does the octet rule state?
    1. A full valence shell consists of 8 electrons
    2. A full nucleus has 8 electrons
    3. An atom can have, at max, 8 electrons
    4. A full choir only has 8 singers
30. An element’s atomic mass is equal to
    1. Protons + electrons
    2. Protons + neutrons
    3. Neutrons + electrons
31. Which energy level is the lowest and closest to the nucleus
    1. 8th
    2. 5th
    3. 2nd
    4. 1st
32. True or false: there are four sublevels – s, p, d, and f
    1. True
    2. False
33. What are the three sublevels within the 3rd energy level
    1. f, s, p
    2. f, d, p
    3. s, f, d
    4. s, p, d
34. Which has more potential energy?
    1. A hammer weighing 700.0 g raised to 3.0 m.
    2. A rock weighing 1 800 g raised to 2.0 m.
    3. A nail weighing 0.05 kg raised to 5.0 m
35. A javelin is raised 10.0 m off the ground and has a potential energy of 501 J. What is the mass of the javelin?
    1. 1.05 J
    2. 49 J
    3. 51 J
    4. 5.11 J