**FALL 2011 SEMESTER EXAM REVIEW KEY**

**~ 17-32 ~**

17. How would you find elements that all share similar chemical properties?
    - ✓ **Look at the families/groups on the periodic table; all elements in the same family share similar chemical properties**
18. What are the best indicators that a chemical reaction has taken place?
    - ✓ **Temperature change, color change, gases produced**
19. What are the two sides to a chemical equation? Write a sample equation to illustrate this.
    - ✓ **Products and reactants**
    - ✓ **Reactant + Reactant → Product + Product**
20. List 5 specific chemical reactions.
    - ✓ **Burning paper, rust, cooking an egg, burning fuel, photosynthesis, respiration, basically anything that produces something completely different than the original substances**
21. Describe Newton's 3 laws.
    - ✓ **1st Law – law of inertia; an object in motion will remain in motion and an object at rest will stay at rest unless acted upon by an outside force**
    - ✓ **2nd Law – law of acceleration; the acceleration of an object depends upon the force acting upon the object relative to the objects mass (a = F/m)**
    - ✓ **3rd Law – action/reaction; for every action there is an equal an opposite reaction of th same strength (forces act in pairs)**
22. Define speed, velocity and acceleration.
    - ✓ **Speed – how fast an object is traveling; distance over time (s = d/t)**
    - ✓ **Velocity – how fast an object is traveling in a specific direction; has a displacement component (s = D/t)**
    - ✓ **Acceleration – speeding up, slowing down (change in speed) and or direction change; also equals the Force acting on an object divided by the mass of the object**
23. Can an object be moving and not accelerating? Explain.
    - ✓ **Yes! If it is not changing speed but is changing direction, it is accelerating.**
24. What is displacement? Why is displacement vital to any discussion of velocity and acceleration?
    - ✓ **Displacement = the distance between starting point and ending point in a straight line;**
    - ✓ **any change in displacement means a change in velocity and/or acceleration**
25. Describe inertia. How do we generally measure inertia?
    - ✓ **Inertia is the tendency of an object with mass to resist change in motion;**
    - ✓ **momentum is one way to measure inertia**
26. Explain how force and mass are related in relation to acceleration.
    - ✓ **Acceleration equals force divided by mass (a = F/m)**
27. Define balanced and unbalanced forces.
    - ✓ **Balanced forces = results in no change in motion (an object can be moving and have balanced forces) i.e., no acceleration**
    - ✓ **Unbalanced forces = results in a change in motion (speed and/or direction) i.e., acceleration**

28. If the forces on an object are balanced, what is that object doing?
    - ✓ **Not accelerating – either not moving, or moving in a constant speed in an unchanging direction**
29. If the forces on an object are unbalanced, what is that object doing?
    - ✓ **Accelerating – either changing speed and/or direction**
30. Define gravity. What is the acceleration due to gravity on Earth? What does this mean?
    - ✓ **Gravity is a force that pulls towards the center of an object's mass.**
    - ✓ **On Earth it is 9.8 $m/s^2$ –**
    - ✓ **this means any object in free fall on the Earth will accelerate downwards at a rate of 9.8 m/s every second it falls**
31. What is friction? List 4 examples of friction.
    - ✓ **Friction is a force that resists motion (3 types: rolling, sliding, air resistance – but these 3 will not be tested);**
    - ✓ **Possible examples: rubbing hands together, brakes on a car, putting hand out the window of a moving car, winds of a tornado, etc.**
32. If you push 3 objects of differing masses with a constant force, which object will accelerate the fastest?
    - ✓ **The one with the smallest mass**

**Possible 27 checks**
**X 3.8 per check**
**Potential grade = 103**