**IPC – 2nd Semester Review for Final Exam - KEY**

This exam will cover chapters 2-8, 11-12, and 14-15. There are 100 questions on this review sheet. **FIFTY** of these questions will be on your final exam.

Questions from Chapter 2

1. Define inertia. The tendency of an object to resist change in its motion.
2. Define speed. The rate of change of an objects position.
3. Define velocity. The speed of an object and the direction of its motion.
4. Define acceleration. The rate of change of the velocity of an object.
5. Define force. A push or pull exerted on an object.
6. Define rate. Any change over time.

Questions from Chapter 3

1. The upward force exerted on an object falling through the air is \_air resistance\_\_\_.
2. When an object moves in a circular path, it accelerates toward the center of the circle as a result of \_centripetal force\_\_\_.
3. The statement “to every reaction there is an equal and opposite reaction” is \_Newton’s Third Law of Motion\_.
4. In the equation, *p=mv*, p represents \_momentum\_\_\_.
5. An object that is in free fall seems to be \_weightless\_\_\_.
6. The relationship among mass, force, and acceleration is explained by \_Newton’s Second Law of Motion\_\_.
7. When two objects collide, their momentum after the collision is explained by \_conservation of momentum\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. The amount of gravitational force between objects depends on their \_masses and the distances between them\_\_.
9. The path of a projectile is \_\_curved\_\_.
10. In the absence of air, a penny and a feather dropped from the same height will \_fall at the same rate\_\_\_.
11. Acceleration due to gravity is \_\_\_9.8 m/s2\_\_.
12. A real car moving at 10 km/h has more momentum than a toy car moving at the same rate because \_its mass is greater\_\_\_.
13. According to Newton’s second law of motion, \_F=ma\_\_\_.
14. When a force is exerted on an object, an equal and opposite force is exerted by the object. These forces are referred to as \_action-reaction forces\_\_.

Questions from Chapter 4

1. How do we calculate kinetic energy? ½ mass x velocity2
2. How do we calculate potential energy? mass x 9.8 m/s2 x height
3. Thermal energy is measured in \_joules\_\_.
4. The \_potential \_ energy of an object increases with its height.
5. The kinetic energy of an object increases as its \_velocity\_\_ increases.
6. Mechanical energy is the total kinetic and \_potential\_\_ energies in a system.
7. \_Friction\_\_ can cause kinetic energy to change into thermal energy.
8. Green plants convert light energy from the sun into \_chemical potential energy\_\_.
9. The mechanical energy of a coconut falling from a tree \_remains constant\_.
10. The law of \_conservation of energy\_ states that energy in a system can change forms but can never be created or destroyed.

Questions from Chapter 5

1. A slanted surface used to raise an object is a(n) \_inclined plane\_\_.
2. A bar that is free to pivot about a fixed point is a \_lever\_\_.
3. How do we calculate work? \_Work = Force x distance\_\_\_
4. How do we calculate power? Power = work/time
5. \_Energy\_\_ is transferred to an object when work is done.
6. The output work of a machine compared to the input work is the \_efficiency\_ of the machine.
7. The amount by which a machine multiplies an effort force is called the \_mechanical advantage\_.
8. Two inclined planes put together form a simple machine called a(n) \_wedge\_.
9. An inclined plane wrapped around a cylindrical post is a \_screw\_\_.
10. The unit of power is called the \_Watt\_.

Questions from Chapter 6

1. Refrigerators and air conditioners are examples of \_heat movers\_.
2. Wind and ocean currents are formed by \_convection\_\_.
3. A material that reduces the flow of heat by conduction, convection, or radiation is a(n) \_insulator\_.
4. The process by which engine fuel burns is \_combustion\_\_.
5. Through what mediums will convection most likely occur? \_liquids and gases\_\_
6. The transfer of energy that does not require matter is \_radiation\_.
7. Solar collectors are parts of \_active solar heating systems\_.
8. A device that converts thermal energy into mechanical energy is a \_heat engine\_\_.
9. The effectiveness of insulation is rated with a(n) \_R-value\_.
10. Temperature measures the \_kinetic energy\_ of the particles of a material.

Questions from Chapter 7

1. Define parallel circuit. A circuit that has two or more separate branches for current.
2. Define series circuit. A path that allows only one route for a current.
3. Define static electricity. Electric charge that has accumulated on an object
4. Define Ohm’s law Current = voltage difference / resistance
5. Define voltage difference. Push that causes charges to move
6. Define resistance. Tendency of a material to oppose the flow of electrons

Questions from Chapter 8

1. A device that increases or decreases the voltage in a power line is called a \_transformer\_.
2. Current that does not reverse direction is called \_direct current\_\_.
3. Current that reverses direction in a regular pattern is called \_alternating current\_\_.
4. The region around a magnet where the magnetic forces act is the \_magnetic field\_\_.
5. An instrument that measures electric current is a \_galvanometer\_\_.
6. The function of an electric motor is to \_change electrical energy to mechanical energy\_.
7. The function of a generator is to \_change mechanical energy to electrical energy\_\_.
8. The strength of magnetic force in an electromagnet is \_increased\_\_ by increasing the current through the coil.

Questions from Chapter 11

1. In a transverse wave, the \_trough\_\_ is the lowest point.
2. The number of ocean waves that pass a buoy in one second is the \_frequency\_ of the wave.
3. The \_crest\_ of a transverse wave is its highest point.
4. To find the \_wavelength\_\_ of a wave, measure the distance from one trough to the next trough.
5. The \_amplitude\_ of a wave is a measure of the amount of energy it carries.
6. In a compressional wave in a coiled spring, a \_rarefaction\_ is where the coils are spread out.
7. A \_wave\_ is a repeating disturbance that transfers energy through matter or space.
8. The medium vibrates perpendicular to the direction the wave travels in a \_transverse wave\_.
9. When you squeeze the coils of a spring together, you cause a \_compression\_.
10. The type of wave made by squeezing the coils of a spring and letting them go is a \_compressional wave\_\_.

Questions from Chapter 12

1. What kind of wave is a sound wave? compressional wave
2. What causes sound waves? vibrations
3. Sound can travel through what three things? solids, liquids, and gases
4. What will sound travel fastest through? solids
5. When specific pitches and sounds are put together in a pattern, what are they called? music
6. What is the name for the coiled structure in the inner ear? cochlea

Questions from Chapter 14

1. The primary pigment colors are \_cyan, magenta, and yellow\_\_\_\_\_\_\_
2. The color \_black\_ is produced by blending the primary pigments.
3. Fluorescent light bulbs \_use less energy\_ than incandescent light bulbs.
4. If light waves change speed when they pass from one medium into another, the light will be \_refracted\_.
5. A blue shirt looks blue in white light because \_blue light\_ is reflected from the shirt.
6. A blue shirt looks \_black\_ in red light.
7. Two polarizing filters overlapped at right angles \_block all light\_.
8. Tracing paper is \_translucent\_.
9. Plastic wrap is \_transparent\_\_.
10. A solid wood door is \_opaque\_\_.

Questions from Chapter 15

1. A flashlight uses a \_concave\_\_ mirror to create a beam of light.
2. Light rays refracted by a concave lens \_spread out\_.
3. \_Convex lenses\_ are thick in the middle and thin at the edges.
4. Plane mirrors reflect light to form \_virtual\_ images.
5. Light is refracted and spread out by a \_concave lens\_.
6. Electrical power for the Hubble Space Telescope is provided by \_solar panels\_.
7. \_Concave\_\_ mirrors can be used to magnify objects or create beams of light.
8. The image produced by a \_convex\_ mirror is upright and smaller than the actual object.
9. A \_virtual\_ image cannot be projected on a screen.
10. When light passes through a lens, it is \_refracted\_.