**Physics Unit 8: Thermodynamics Test Review**

**Test Setup:**

Multiple Choice: 14 ( 1 pt each ) Short Answers: 8 (5 pt each) Problems: 7 ( 6 pt each)

**Short Answers:**

1. A match is struck on a matchbook cover. How is energy transferred so that the match can ignite and produce a flame?
2. A mechanic pushes down very quickly on the plunger of an insulated pump. The air hose is plugged so that no air escapes. What type of thermodynamic process takes place? What type of energy transfer and change occurs?
3. What is true of the internal energy of an isolated system?
4. According to the conservation of energy, what is true about the net work and net heat in a cyclic process?
5. How does Qc > 0 relate to the 2nd law of Thermodynamics?
6. Explain why the efficiencies of real heat engines are always much less than the calculated maximum efficiencies of ideal heat engines.
7. What is entropy?
8. Why must work be done to reduce entropy in most systems?

**Multiple Choice:**

1. What accounts for an increase in the temperature of a gas at constant volume?
2. Know the formula for work
3. Know the definition of the following:
4. Isovolumetric system
5. Isobaric
6. Adiabatic
7. Isothermal
8. 1st law of thermodynamics
9. What is the difference between energy transferred to or from a system as heat and energy transferred to or from a system by work according to the 1st law of thermodynamics?
10. In the 1st law of thermodynamics know that the signs of the terms in the equation:
    * Q
      + Positive if energy is transferred *to* the system by heat
      + Negative if energy is transferred *out of* the system by heat
    * W
      + Positive if work is done *on* the system
      + Negative if work is done *by* the system
    * DU
      + Positive if the temperature increases
      + Negative if the temperature decreases
11. How does a real heat engine differ from an ideal cyclic heat engine?
12. Know what the 2nd law of thermodynamics states
13. Know what efficiency of ideal heat engines means
14. What occurs when a systems disorder is increases?

**Problems:**

**Study the physics problems from the following worksheets listed below.**

**Notice the breakdown of the problem types listed below**

Work done on or by a gas: 3

1st law of thermodynamics: 1

Heat engine efficiency: 3