**Conservation Of Energy** (p. 453 – 461)

**I. Energy Transformations**

 **1. Energy changes from one form to another while the total energy of the system remains**

 **constant.**

 Circle One : True False

 **2. Circle the correct option for energy at different heights of a roller coaster.**

 Top of Hill : High PE / Low KE PE = KE Low PE / High KE

 Halfway : High PE / Low KE PE = KE Low PE / High KE

 Bottom of Hill : High PE / Low KE PE = KE Low PE / High KE

 **3. On a swing, kinetic energy is greatest at the bottom of the swing arch.**

 Circle One : True False

 **4. When a baseball player hits a pop-fly, the potential energy is highest at its highest point.**

 Circle One : True False

 **5. Kinetic energy is transformed into potential energy as the velocity of a falling object**

 **increases.**

 Circle One : True False

**II. The Law Of Conservation Of Energy**

 **1. State the Law of Conservation of Energy.**

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 **2.** **Which of the statements is true concerning energy?**

 a. Energy can be created.

 b. Energy can be destroyed.

 c. The total amount of energy in a system can change.

 d. Energy can change from one form to another.

 **3. Explain how each of the following illustrate conservation of energy.** *(Think about it.)*

 1. Roller Coasters : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2. Skiing : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. Pendulums : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **4. In what ways is energy transformed in each example?**

 1. Roller Coasters : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2. Skiing : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. Pendulums : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **5. State the *First Law of Thermodynamics*.**

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 **6. Match the type of system with the correct definitions.**

 1. \_\_\_\_\_\_\_\_ Closed A. No energy or matter is exchanged.

 2. \_\_\_\_\_\_\_\_ Isolated B. Energy, but not matter, is exchanged.

 3. \_\_\_\_\_\_\_\_ Open C. Energy and matter are exchanged with the surroundings.

 **7. The Earth is considered a closed system.**

 Circle One : True False

**III. Efficiency of Machines**

 **1.** **Define the term efficiency.**

 Efficiency –

 **2. Write out the equation to determine efficiency.**

 Efficiency = *e* =

 **3. A machine can be 100% efficient?**

 Circle One : True False

 **4. How can the efficiency of a machine be increased?**

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 **5. Work output can never be greater or equal than work input.**

 Circle One : True False

 **6. Define the term perpetual motion machine.**

 Perpetual Motion Machine –

 **7. Any machine needs some form of work input.**

 Circle One : True False