**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