PHYSICS 11

THE LAW OF CONSERVATION OF ENERGY

Energy cannot be created or destroyed; energy can only be transformed from one form to another.

Examples:

- Thermal energy of steam can be converted to mechanical energy of a turning turbine.
- Mechanical energy of turbine can be converted to electrical energy from an electromagnetic field in a generator.
- Mechanical energy of moving parts can be converted to thermal energy through friction.
- Potential energy of an object above the reference level can be converted to kinetic energy of an object falling down from the initial position.

Conservation of Mechanical Energy

- **KE converts to PE**
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Example 1:
Consider a 3.0 g object that rests 2.0 m above the floor. Calculate the potential and kinetic energy of this object when:

a) The object is at rest in its initial position.

b) The object is 1.75 m above the floor while experiencing a free fall.

c) The object is 0.25 m above the floor while experiencing a free fall.

d) The object hits the ground and rolls on the horizontal frictionless floor.

e) How fast is the object moving once it hits the floor?