

Chapter 4

Energy

LESSON PLAN

SPECIFIC OBJECTIVES

Students will learn about

- ❖ work, power and energy in brief
- ❖ work and related few examples
- ❖ conditions for doing work
- ❖ measurement of work
- ❖ SI unit of work
- ❖ energy, its SI unit and forms
- ❖ mechanical energy, i.e., kinetic energy and potential energy
- ❖ interconversion of potential energy and kinetic energy
- ❖ power and its units

Teaching Aids

Pictures/models showing work done in different manners in daily life and also the conditions involved in it; pictures showing kinetic and potential energies, and kinds of potential energy, i.e., gravitational and elastic potential energy; few pictures showing interconversion of potential and kinetic energies.

Teaching Strategy

- ❖ The teacher should teach the students about work, power and energy in brief.
- ❖ Students should be taught about work and its related examples and illustrations.
- ❖ Students should be asked to learn conditions for work and activity 1 related to a list of daily-routine activities whether work is done or not given at page 64. They should also be encouraged to learn question-answer; measurement of work with illustrations and related something more given at page 64.
- ❖ The teacher should ask the students to study SI unit of work and to practice few numerical examples related to work.
- ❖ Students should be asked to study something more related to work done given at page 66.

- ❖ Student should be asked to solve check point 1 given at page 66. They should also be asked to study energy, its SI unit and forms. They should also be asked to study mechanical energy and its kinds kinetic energy and potential energy.
- ❖ Students should be asked to perform activities 2 and 3 related to kinetic energy given at page 67. They should also be asked to learn ocean waves and sea tides given at page 67 under something more. They should be asked to practice numerical examples related to kinetic energy.
- ❖ Students should be asked to study potential energy and its kinds. They should also be asked to perform activity 4 showing that an object possesses potential energy due to its position, i.e., gravitational potential energy and related illustrations and screened matter. They should also be asked to study elastic potential energy and its related activity 5 given at page 70. They should also be asked to practice numerical problems based on potential energy.
- ❖ The teacher should ask the students to learn Table 4.1 showing the distinction between kinetic energy and gravitational potential energy. He/She should also ask the students to solve check point 2 given at page 71.
- ❖ Students should be asked to study interconversion of potential energy and kinetic energy and related few examples with diagrams. They should be asked to study power and its units. They should be asked to learn Table 4.2 showing distinction between work and power and Table 4.3 showing distinction between energy and power. They should also be asked to practice numerical problems related to power.
- ❖ Students should be asked to solve check point 3 given at page 75.
- ❖ Students should be asked to recap the chapter using wrapping it up and know these terms. They should also be asked to answer the questions given in test yourself and discuss the think zone given in test yourself.

Boost UP

- ❖ The teacher should ask the students to define work, and to tell its few examples.
- ❖ Students should be asked to tell the formula of the work.
- ❖ Students should be asked to tell the SI unit of work. They should also be asked to establish the relationship between kilojoule and joule.
- ❖ Students should be asked to tell the definition of energy, its SI unit and different forms. They should be asked to tell the definition of mechanical energy and its parts, and their formulae. They should also be asked to tell two examples each of elastic and gravitational potential energies.
- ❖ The teacher should also ask the students to answer the questions related to interconversion of potential energy and kinetic energy; power and its units.

Expected Learning Outcomes

Students will be able to know the

- ❖ brief introduction to work, power and energy.
- ❖ work and its examples.
- ❖ conditions for doing work.

- ❖ measurement of work.
- ❖ SI unit of work.
- ❖ energy, its SI unit and different forms.
- ❖ mechanical energy and its parts.
- ❖ potential energy and its parts.
- ❖ interconversion of potential energy and kinetic energy.
- ❖ power and its units.

Evaluative Questions

The teacher should ask the following questions to evaluate the students.

1. Define work.
2. Mention one example of work.
3. What is the SI unit of work?
4. What is called the capability of doing work?
5. What do m and v indicate in $K = \frac{1}{2}mv^2$?
6. Write the name of kinds of potential energy.
7. What is meant by power?
8. Convert the value of 1 hp in watt.