

Chapter 5

Light Energy

LESSON PLAN

SPECIFIC OBJECTIVES

Students will learn about

- ❖ introduction to light
- ❖ refraction of light and its related terms
- ❖ refraction and speed of light
- ❖ refractive index of a medium
- ❖ laws of refraction; examples of refraction of light
- ❖ refraction through a glass slab and related features
- ❖ spherical mirrors and their related terms
- ❖ images formed by a mirror
- ❖ image formation by spherical mirrors
- ❖ rays used in ray diagrams
- ❖ real images formed by a concave mirror
- ❖ uses of spherical mirrors, i.e., concave and convex
- ❖ refraction through a prism; dispersion of light by a prism
- ❖ recombination of seven constituent colours of white light spectrum

Teaching Aids

Pictures/models showing the formation of rainbow; ray diagrams showing refraction of light, refraction through a glass slab, spherical mirrors, i.e., concave and convex mirrors and related images formed by them; pictures showing refraction through a prism, dispersion of light and recombination of seven constituent colours of white light spectrum.

Teaching Strategy

- ❖ Students should be asked to study the brief concept of light. They should be asked to study refraction of light and its related activity 1 given at page 82. They should also be asked to learn terms related to refraction of light and also related illustration.

- ❖ Students should be asked to learn question-answer related to refraction of light given at page 82. They should also be asked to study refraction and speed of light. They should also be asked to study refractive index of a medium.
- ❖ The teacher should ask the students to learn question-answer related to refractive index of a medium and Table 5.1 showing refractive indices of some commonly use media given at page 83.
- ❖ Students should be encouraged to study laws of refraction; some examples of refraction of light and related illustrations. They should also be asked to study of refraction through a glass slab and its related activity 2 given at page 85. They should also be asked to study features of refraction through a glass slab. They should also be asked to solve check point 1 given at page 85.
- ❖ The teacher should ask the students to study spherical mirrors and activity 3 showing the action of a curved mirror given at page 86. He/She should also ask the students to study the terms related to spherical mirrors; the relation between focal length and radius of curvature and its related question-answer given at page 87.
- ❖ Students should be asked to study images formed by a mirror; Table 5.2 showing the differences between real and virtual images. They should also be asked to study image formation by spherical mirrors; rays used in ray diagrams; something more related to incident and reflected rays given at page 89.
- ❖ The teacher should ask the students to study real images formed by a concave mirror with diagrams when an object is placed at different places; question-answer related to it given at page 89. He/She should ask the students to learn something more related to image formation of concave and convex mirrors; to learn Table 5.3 showing images formed by a concave mirror given at page 91. He/She should also ask the students to study uses of spherical mirrors, i.e., concave and convex mirrors; question-answer given at page 91. He/She should also ask the students to solve check point 2 given at page 92.
- ❖ Students should be asked to study refraction through a glass prism and its related activity 4 given at page 92. They should be asked to study dispersion of light by a prism using activity 5 given at page 93. They should be asked to learn question-answer related to rainbow given at page 93; recombination of seven constituent colours of white light spectrum using activity 6 given at pages 93–94. They should also be asked to solve check point 3 given at page 94.
- ❖ The teacher should ask the students to recap the chapter using wrapping it up and know these terms. He/She should ask the students to answer the questions given in test yourself and discuss the think zone present in it.

Boost UP

- ❖ The teacher should call each student one-by-one of the classroom near the blackboard and tell him/her to write definition of refraction of light.
- ❖ The teacher should ask each student to identify incident ray, point of incidence, refracted ray, normal, angle of incidence and angle of refraction using the figure drawn by the teacher on the blackboard.
- ❖ The teacher should tell the students to write speed of light in air, water and glass.

- ❖ The teacher should ask few questions to students related to refractive index of a medium; laws of refraction and few examples related to refraction of light.
- ❖ Students should be asked to tell the features of refraction through a glass slab. They should be asked to identify concave and convex mirrors, and also to define and identify the terms related to spherical mirrors.
- ❖ Students should be asked to differentiate real and virtual images. They should also be asked to tell the nature of image formed by spherical mirrors when an object is placed at different positions. They should also be asked to tell the answer of questions related to uses of concave and convex mirrors.
- ❖ The teacher should ask the students to define prism and angle of prism; also to tell which colour deviates the most and which colour deviates the least. He/She also ask the students to name the seven colours that constitute a white light.

Expected Learning Outcomes

Students will be able to know the

- ❖ introduction to light.
- ❖ refraction of light and its related terms.
- ❖ refraction and speed of light.
- ❖ refractive index of a medium.
- ❖ laws of refraction; examples of refraction of light.
- ❖ refraction through a glass slab and its features.
- ❖ spherical mirrors and their related terms.
- ❖ relation between focal length and radius of curvature.
- ❖ images formed by a mirror.
- ❖ differences between real and virtual images.
- ❖ image formation by spherical mirrors.
- ❖ rays used in ray diagrams.
- ❖ real images formed by a concave mirror.
- ❖ refraction through a prism; dispersion of light by a prism.
- ❖ recombination of seven constituent colours of white light spectrum.

Evaluative Questions

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

1. Define refraction of light.
2. Name the point at which the incident ray enters the second medium.
3. Is angle of incidence equal to angle of refraction?
4. What is optically rarer medium?
5. Define concave mirror.
6. Write one use of convex mirror.
7. What is dispersion of light?
8. Establish the relation between focal length and radius of curvature.