

Unit six (6)

Light Energy

All things need energy to move or to do work. Energy is the ability to do Work. We obtain energy from various sources that enable us to do Work. The food we eat moving wind, flowing water, dry cells, burning coals and sunlight are some sources of energy.

One form of energy can be converted into another form. for instance, electric bulb converters into electric energy and electric stove converters it into heat energy.

Light Energy

It is a form of energy that can be obtained from other forms of energy. It can also be converted into other forms of energy. Light energy produces sensation of sight when it falls up on an object and our eyes.

Sources of light

Light source are objects or things that give out light. Light emits from two different kinds of sources.

1. **Natural light** source are naturally existing body or objects that emit light of their own.

Examples

- ✓ The sun
- ✓ The moon
- ✓ Stars

2. **Artificial (manmade) light sources** are Artificial objects that give out light due to changes within their body.

Examples

- ✓Light torch
- ✓Light bulbs
- ✓Candle

Propagation of light

Light rays, coming out of any light sources such as candle, a torch light, or lamp travel (propagation)in straight lines in all directions.

Shadow

Shadow is a dark area formed behind an object when the path of light is blocked by the object. An object casts its shadow on the opposite side of the

source of light.

Light ray and beam of light rays.

Light propagates in straight lines in all direction from its source. If we carefully look at the light propagating from a source it consists of many lines coming out of the source. These lines of light indicate the 2nd of light rays coming out of the light source.

- A. **Light ray** is a straight line used to indicate of propagation of light.
- B. **Beam of light** when two or more light rays come together, they are called beam of light. In beam of light, the light rays may travel **in parallel, divergent or convergent**.
 - 1. **parallel beam of light** a group of light rays that do not cross each other and move in the same direction.
 - 2. **Convergent beam of light** a group of light rays that move to a focal point. All light rays come together at a point called focal point.
 - 3. **Divergent beam of light** Is a group of light rays that move In different direction starting from a common point.

Passage of light through substances

Materials have the property of either allowing light to pass through them or do not allow it to pass through them.

A. Transparent Substances

These are Substances through which light can pass completely.
They cast no shadow at all.

Examples

- ✓ Water
- ✓ Clear glass
- ✓ Polyethene etc.

B. Translucent Substances

These are Substances through which light can pass partially.
They can faint shadows.

Examples

- ✓ Tracing paper
- ✓ Oily paper
- ✓ Stained glass etc.

C. Opaque Substances

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These are materials which do not allow light to pass through them. They cast perfect shadow. We cannot see through Opaque objects.

Examples

- ✓ Wood
- ✓ Soil
- ✓ Metals etc.

Reflection of Light

We see light sources such as the sun, candle, torchlight, light bulbs etc. We see objects that do not give out light rays, when light from light sources falling on them is reflected in to our eyes. We need three things to see non-light source objects.

1. **Light sources (light)**
2. **Light reflectors (objects to be seen)**
3. **Our eyes (Light receiver)**

Reflection of light is to be bouncing of light rays after falling on an object.

Types of Reflection

All objects reflect light falling on them. For instance, the light reflected From plane mirrors and white papers vary. Reflection varies in types and degree.

They are two types of Reflection.

* **Regular Reflection**

* **Irregular Reflection**

1. **Regular Reflection** is the reflection of light from flat and smooth surfaces. In this type of reflection incoming parallel light rays become parallel after reflection.
2. **Irregular Reflection** is the reflection of light from rough surfaces. The incoming parallel light rays reflected in different direction after reflection.

All the light rays falling on an object do not reflect. Some are absorbed by the body while others pass through the object.

- **Incident light rays** is the light ray coming to any deflecting body from a source.
- **Reflected light rays** is the light ray renounced from reflecting object.

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- **Normal Line** is a line perpendicular to the reflecting body at the point where incident and deflected light rays meet.