SHARJAH INDIAN SCHOOL (B.W)

Focal length of a concave mirror.

Ex.No: 1.

Aim:- To determine the focal length of a concave mirror by distant object method.

Apparatus:-

A concave mirror, a mirror stand, a screen and a scale.

Theory

When the object is at infinity, the rays are parallel to the principal axis, they pass through the focus after reflection from the mirror.

Procedure.

1. Mount the concave mirror in a mirror stand.
2. Locate a distant object from the window
3. Place the mirror in such a way that it faces the distant object.
4. Place the screen infront of the mirror and adjust it to get a real, inverted, diminished image on the screen.
5. Measure the distance between the mirror and the screen. This is the focal length of the mirror.
6. Repeat the experiment and calculate the average focal length.

Precautions.

1. The concave mirror should be fixed in the vertical plane.
2. The base of mirror and the screen should be

in line to the metre scale.

3. Record the focal length only when a well defined, inverted and diminished image of the object is formed on the screen.

Result

The focal length of the concave mirror = _____

SHARJAH INDIAN SCHOOL - B.W

Ex. No: 2 Focal length of a convex lens.

Aim:-

To determine the focal length of a convex lens by focusing a distant object.

Apparatus:-

A convex lens, lens stand, screen and a metre scale.

Theory

When the object is at infinity, the light rays from each point of the object reaches the lens in the form of a beam of parallel rays and the lens forms the image in its focal plane.

Procedure

1. Locate a distant object from the window of your laboratory.
2. Place the lens on a lens stand and adjust its position such that it comes in line with the object.
3. Place a screen behind the lens and adjust its position so that a sharp inverted diminished image is formed on it.
4. Record the distance between the position of the lens and the screen. This is equal to the focal length of the lens.
5. Repeat the experiment for different objects.
6. Calculate the average focal length from the data.

Precautions

1. Fix the convex lens vertically in the holder.
2. The lens stand and the screen should be in line with the scale.
3. Record the position of the screen only when a sharp image is formed.

Result

The focal length of the convex lens = _____

REFRACTION THROUGH A RECTANGULAR GLASS SLAB.

Aim - To trace the path of a ray of light passing through a glass slab and to measure the angle of incidence and angle of emergence.

Apparatus - Drawing board, pins, white sheet of paper, rectangular glass slab, pencil etc.

Procedure - Fix the paper on a drawing board. Place the glass slab on the paper and draw around the boundary. Draw a normal to one side near the left end and measure the angle of incidence as 30°. Draw the incident ray and mark angle of incidence. Fix two pins on the incident ray. Place the glass slab back and looking through the glass slab, locate the image of the pins and fix two more pins such that the images are on the same line of the pins. Remove the glass slab and join the two points marked. Draw the normal to the point where the emergent ray meets the side of the slab. Measure the angle of emergence.

Result.

1. Angle of incidence = angle of emergence.
2. Angle refraction is less than angle of incidence.

Precautions.

1. The pins should be upright.
2. The angle of incidence should be between 30° and 60°.
3. The minimum distance between the pins should be 5cm or more.