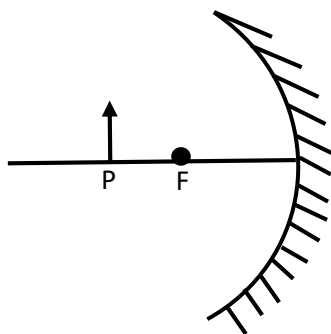


Exercise II- Optics

WS-2019/2020

Problem 1:

- A concave mirror having a radius of curvature 40 cm is placed in front of an illuminated point source at a distance of 30 cm from it. Find the location of the image. And describe the image.
- A convex spherical mirror, whose focal length has a magnitude of 15 cm is to form an image 10 cm behind the mirror.
 - Where should the object be placed?
 - What is the magnification of the mirror?
- Figure shows an object located at $P = 0.25$ m from concave spherical mirror with principal focus F . The focal length of the mirror is 0.10m. How does the image change if the object is moved from point P towards point F ?



Problem 2:

- A small bird is sitting on the central axis 40.0 cm in front of a concave spherical mirror having a focal length of 20.0 cm. Locate the image and describe it completely. What is the transverse magnification of the image?
- Locate the image of a paperclip 100 cm away from a convex spherical mirror having a radius of curvature of 80 cm.
- An object is located at a distance s_o from a spherical mirror of radius R . Show that the resulting image will be magnified by an amount

$$M_T = \frac{R}{2s_o + R}$$

- A spherical mirror is placed 30 cm from an object. It produces an erect image twice the size of the object. What kind of mirror has been used? Determine its radius of curvature.

Problem 3:

Referring to the dove prism in the following figure, rotate it through 90° about an axis along the ray direction. Sketch the new configuration and determine the angle through which the image is rotated.

