Science

(<u>www.tiwariacademy.com</u>) (Chapter – 10) (Light – Reflection and Refraction)

(Class – X)

Page 171

Question 1:

Find the focal length of a convex mirror whose radius of curvature is 32 cm.

Answer 1:

Radius of curvature, R = 32 cm Radius of curvature = 2 × Focal length (*f*) R = 2f

$$f = \frac{R}{2} = \frac{32}{2} = 16$$
 cm

Hence, the focal length of the given convex mirror is 16 cm.

Question 2:

A concave mirror produces three times magnified (enlarged) real image of object placed at 10 cm in front of it. Where is the image located?

Answer 2:

Magnification produced by a spherical mirror is given by the relation,

 $m = \frac{\text{Height of the image}}{\text{Height of the object}} = -\frac{\text{Image distance}}{\text{Object distance}}$ $m = \frac{h_1}{h_0} = -\frac{v}{u}$

Let the height of the object, $h_0 = h$ Then, height of the image, $h_1 = -3h$ (Image formed is real)

$$\frac{-3h}{h} = \frac{-v}{u}$$
$$\frac{v}{u} = 3$$

Object distance, $u = -10 \text{ cm } v = 3 \times (-10) = -30 \text{ cm}$

Here, the negative sign indicates that an inverted image is formed at a distance of 30 cm in front of the given concave mirror.

