# CASE STUDY QUESTION 40

Read the following and answer any four questions from (i) to (v)

An overhead projector (OHP), like a film or slide projector; uses light to project an enlarged image on a screen. In the OHP, the source of the image is a page-sized sheet of transparent plastic film (also known as foils) with the image to be projected either printed or hand-written/drawn. These are placed on the glass surface of the projector, which has a light source below it and a projecting mirror and lens assembly above it as shown in the figure.
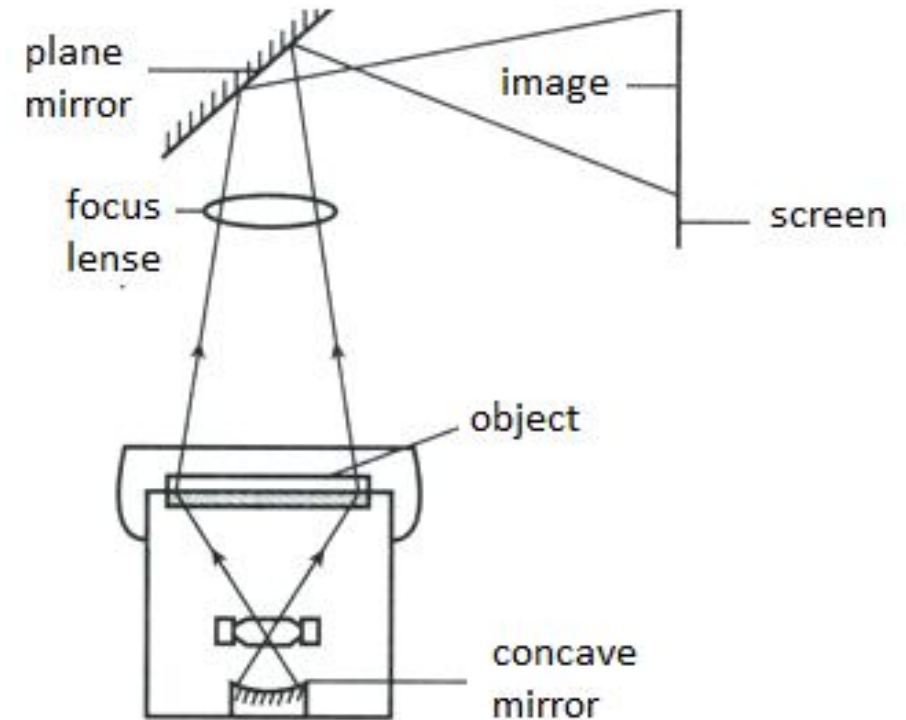
(i) Based on the diagram shown, what kind of lens is used to make the overhead projector?
(a) concave lenses (b) convex lenses (c) bifocal lenses (d) flat lenses

Ans: (b) convex lenses

(ii) The image obtained will be erect and real. How?
(a) The image when passed through the lens was erect and was directly obtained on the screen.
(b) The image when passed through the lens was inverted and then it gets reflected on the mirror to be obtained on the screen.
(c) The screen used automatically makes the image erect and real.
(d) Both (b) and (c)

Ans: (b) The image when passed through the lens was inverted and then it gets reflected on the mirror to be obtained on the screen.

(iii) Why is concave mirror used and not convex mirror?
(a) because concave mirror can give real image.
(b) because convex mirror can give real image.
(c) because concave mirror cannot give real image.
(d) because convex mirror cannot give virtual image.

Ans: (a) because concave mirror can give real image.

(iv) If the radius of curvature of concave mirror is 12 cm. Then, the focal length will be :
(a) 12 cm   (b) 6 cm   (c) -24 cm   (d) -6 cm

We know that $f = R/2 = 12/2 = 6$ cm
But the sign of focal length of concave mirror is negative.
Therefore f = -6 cm

(v) The power of a convex lens is _____ and that of a concave lens is _____

(a) positive, negative   (b) positive, positive

(c) negative, positive   (d) negative, negative

Ans: (a) positive, negative