ACTIVITY- 6(Image formation by Convex Lens)

AIM: To study the nature of image formed by the convex lens, in a screen(for different distance of object from lens)

APPARATUS:

Convex lens,Object,Lens stand and Screen

PRINCIPLE:

The size of the image formed by a convex lens depends on the position of the object with respect to the convex lens.

PROCEDURE:

1. Find the rough focal length of the given convex lens by distant-object method.Note it down.
2. Mount the convex lens on the lens stand.
3. Place the object beyond 2f and locate the sharpest real and inverted image of the screen by adjusting the position of the screen.Note the size of image, its size is smaller.
4. Now place the object at 2f and again adjust the position of the screen to get the sharpest,real and inverted image of the same size.
5. Now place the object between f and 2f and again adjust the position of the screen to get the sharpest,real and inverted magnified image on screen.
6. Now place the object at f and again adjust the position of the screen to get the image.You will not be able to obtain a distinct image for any position of the screen because of the fact that if an object is placed at f, its image is formed at infinity and it is blurred.
7. Record all observations in the table.

RESULT:

1. The change in position,nature and size of the image is according to theoretical predictions.

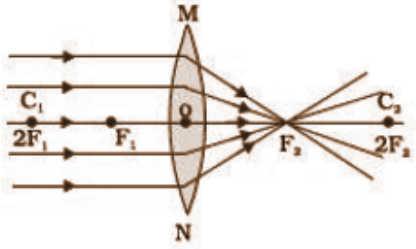
PRECAUTIONS:

1. The optic center of the convex lens, object and the screen all should lie on the same line.
2. Do not place the object closer to the rough focal length of the lens. This may produce only a virtual image.

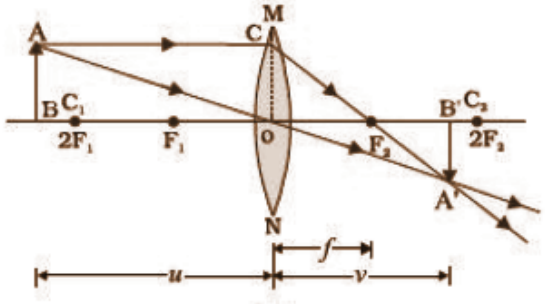
SOURCES OF ERROR:

1. The lens may not be free from aberrations like spherical, chromatic aberrations.
2. Uprights may not be vertical.

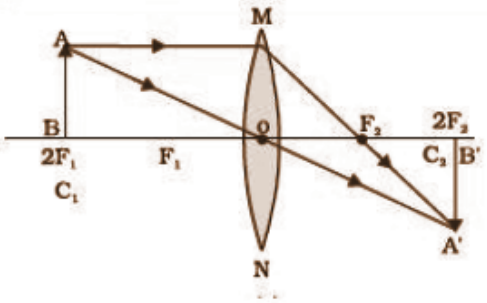
DIAGRAM



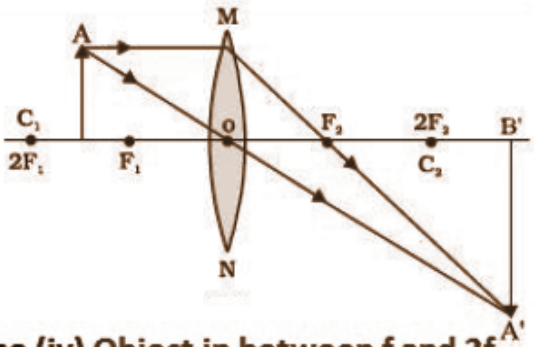
Case (i) Object at infinity



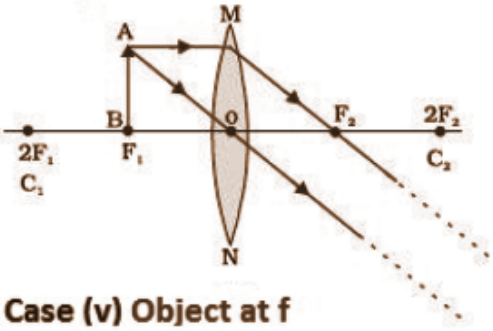
Case (ii) Object at beyond 2f



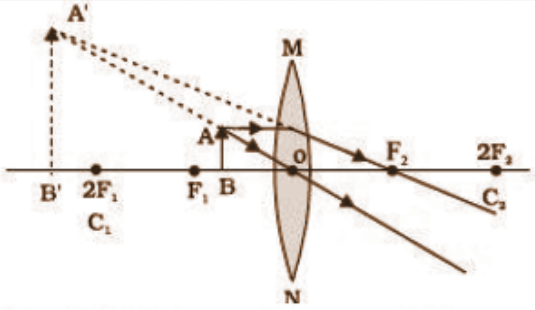
Case (iii) Object at 2f



Case (iv) Object in between f and 2f



Case (v) Object at f



Case (vi) Object distance < f

OBSERVATIONS:

No	Position of object relative to lens(cm)	Position of image(cm)	Nature of the image
1	At infinity	At F	Real,Inverted and highly diminished
2	Beyond 2F	Between F and 2F	Real,Inverted and Diminished
3	At 2F	At 2F	Real,Inverted and Same size
4	Between F and C	Beyond C	Real,Inverted and Magnified
5	At F	At infinity	Real,Inverted,Magnified but blurred
6	Between F and P	Behind the mirror	Virtual(cannot be taken on screen),erect,magnified