

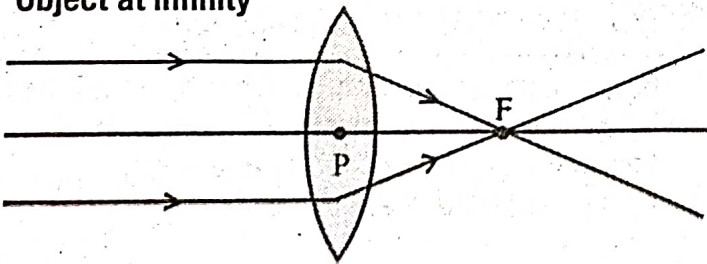
Ray diagrams of formation of images by lenses

Points to be taken into account while drawing the image formation.

- There is no deviation for the ray passing through the optic centre.
- Incident ray parallel to the principal axis, after refraction passes through the principal focus in the case of a convex lens. In the case of a concave lens, after refraction the ray appears to be coming from the principal focus in the same side.
- The ray incident through the principal focus passes out parallel to the principal axis in the case of both the lenses.

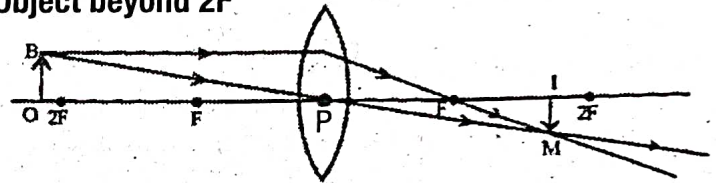
Ray diagrams of formation of images at different positions of the object.

Object at infinity



- Ray incident parallel to the principal axis concentrate on the principal focus.
- Image is formed on the principal focus.

Object beyond 2F

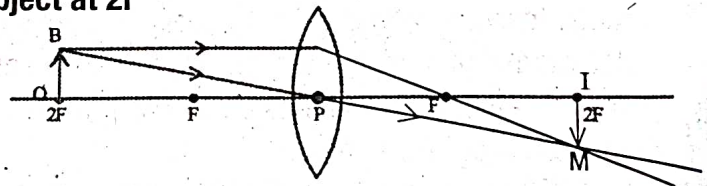


Position of the image : Between F and 2F on the other side

Nature of the image : Real, inverted

Size of the image : Diminished

Object at 2F

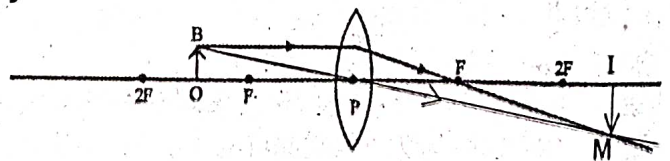


Position of the image : At 2F

Nature of the image : Real, inverted

Size of the image : Same size

Object between F and 2F

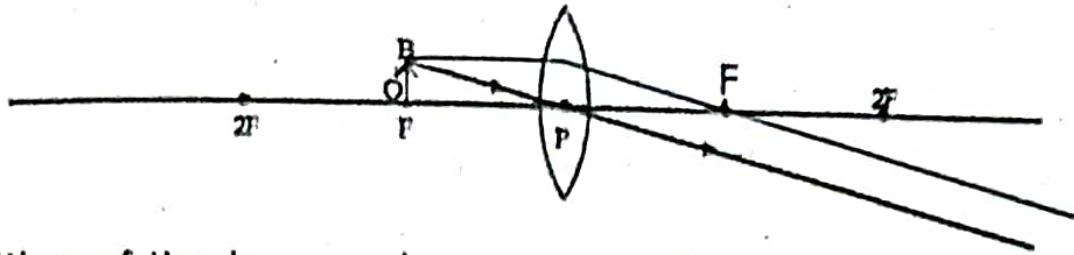


Position of the image : Beyond $2F$

Nature of the image : Real, inverted

Size of the image : Magnified

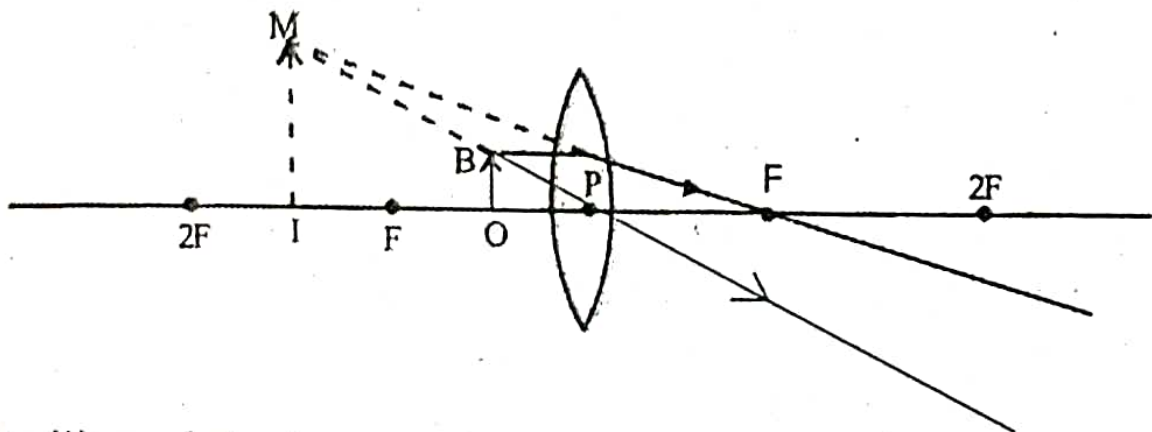
Object at F



Position of the image : Image is not formed.

Reason : Rays come out parallel (do not meet).

Object between F and lens

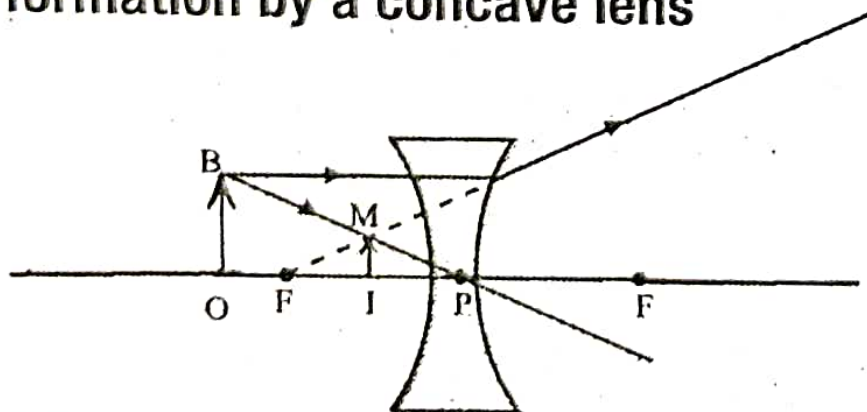


Position of the image: Same side of the object

Nature of the image : Erect, virtual

Size of the image : Very much magnified

Image formation by a concave lens



- **What is the nature of the image?**

Whatever be the position of the object, the image is formed between F and lens.

Diminished, virtual and erect image is formed on the same side of the object.