

The filament of a lamp is 80cm from a screen and converging lens make image three times magnified on a screen...find focal length and distance of lens from the filament???

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

$$f = \frac{1}{\frac{1}{v} - \frac{1}{u}}$$

$v$  - distance of image;

$u$  - distance of object;

$f$  - focal length of the lens.

The magnification for lenses can be given as

$$m = \frac{v}{u}$$

$$v = -80 \text{ cm}$$

$$m = 3$$

$$u = \frac{v}{m} = \frac{-80}{3} = -26,667 \text{ cm}$$

$$f = \frac{1}{\frac{1}{-80} - \frac{1}{-26,667}} = 40 \text{ cm}$$

The focal length is 40 cm, the distance of lens from the filament is -26,667 cm.