Aim: To find the focal length of a convex lens by plotting a graph:

(i) between u and v (ii) between $\frac{1}{u}$ *and* $\frac{1}{v}$

Apparatus: An optical bench with three uprights, a convex lens, lens holder, two optical needles, a knitting needles & a half-metre scale.

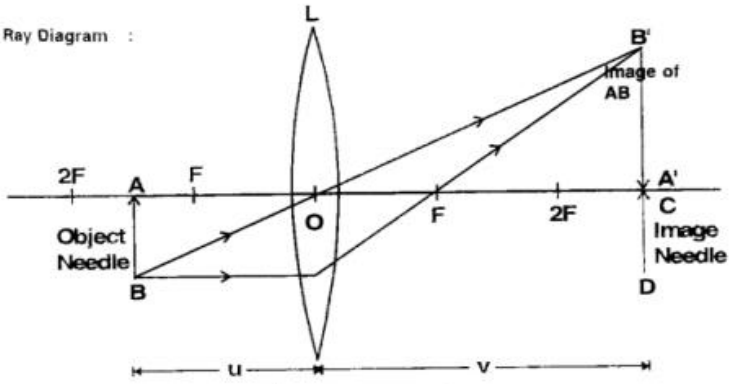

Fig. 11.1 : Focal Length of Convex Lens

Formula Used:

The relation between *u, v and f* for convex lens is:

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

Observations:

(i) Rough focal length of the lens =

(ii) Actual length of knitting needle, x = l

(iii) Observed distance between object needle & the lens when knitting needle is placed between them, y =

(iv) Observed distance between image needle & the lens when knitting needle is placed between them, z =

(v) Index correction for the object distance u, x – y =

(vi) Index correction for the image distance v, x – z =

Observation Table:

S. No.	Position of: (cm)			*u (cm)*	*v (cm)*	*1/v (cm^{-1})*	*1/u (cm^{-1})*
	Object needle	**Lens**	**Image needle**				
1							
2							
3							
4							
5							
6							

Calculations for focal length {table}

S.NO.	-u	v	F=$\frac{uv}{u-v}$
1.			
2.			
3.			
4.			
5.			
6.