REFLECTION AT CURVED SURFACES

1. 1994 Q1a P2

(a)Draw a ray diagram to show what is meant by

(i) The principal focus and

(ii) The focal length of a concave mirror. (3 marks)

2. 1995 Q36 P1

Explain with the aid of a labelled ray diagram the wide field of view of a convex mirror (2 marks)

3. 1995 Q3a P2

(a) An object O is placed in front of convex mirror as shown in figure 2

Fig. 2

(i) Draw to scale a ray diagram to show the position of the image (5 marks)

(ii) Determine the magnification (3 marks)

4. 1996 Q22 P1

A lady holds a large concave of focal length 1 m, 80 cm from her face, state two characteristics of her image in the mirror (2 marks)

5. 1997 Q26 P1

Figure 9 shows two parallel rays incident on a concave mirror. F is the focal point of the mirror.

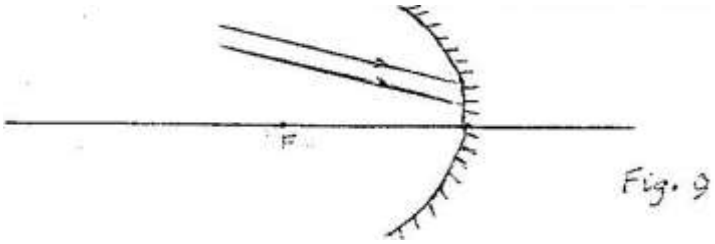


Fig. 9

Sketch on the same diagram the path of the rays after striking the mirror

6. 2000 Q23 P1

Fig. 12 shows a ray of light incident on a convex mirror.

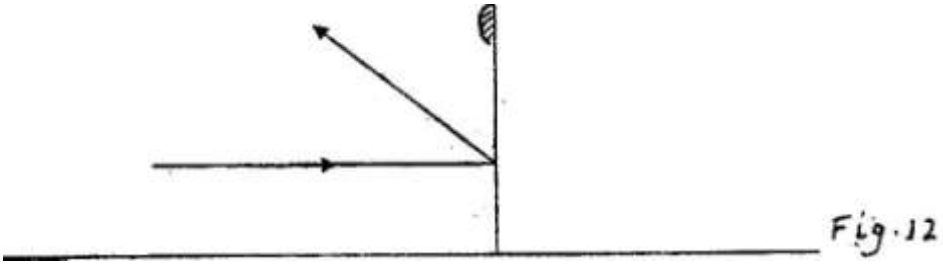


Fig. 12

Using a suitable construction on the same diagram determine the radius of curvature of the mirror.

7. 2000 Q1 P2

a) i) State one application of each of the following.

Convex mirror-

Parabolic mirror –

ii) Fig. 1, which is drawn to a scale of 1:5, represents an object O and its image 'I' formed by a concave mirror.

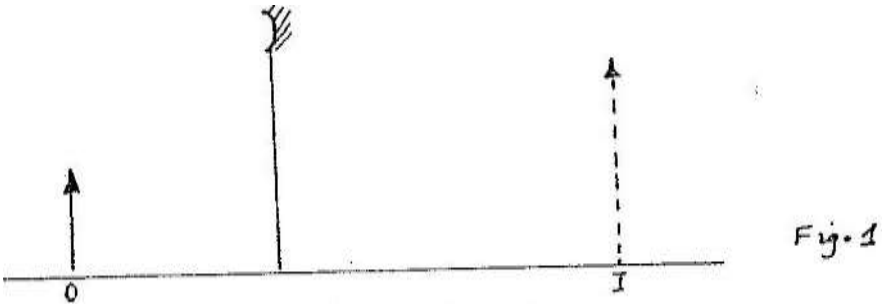
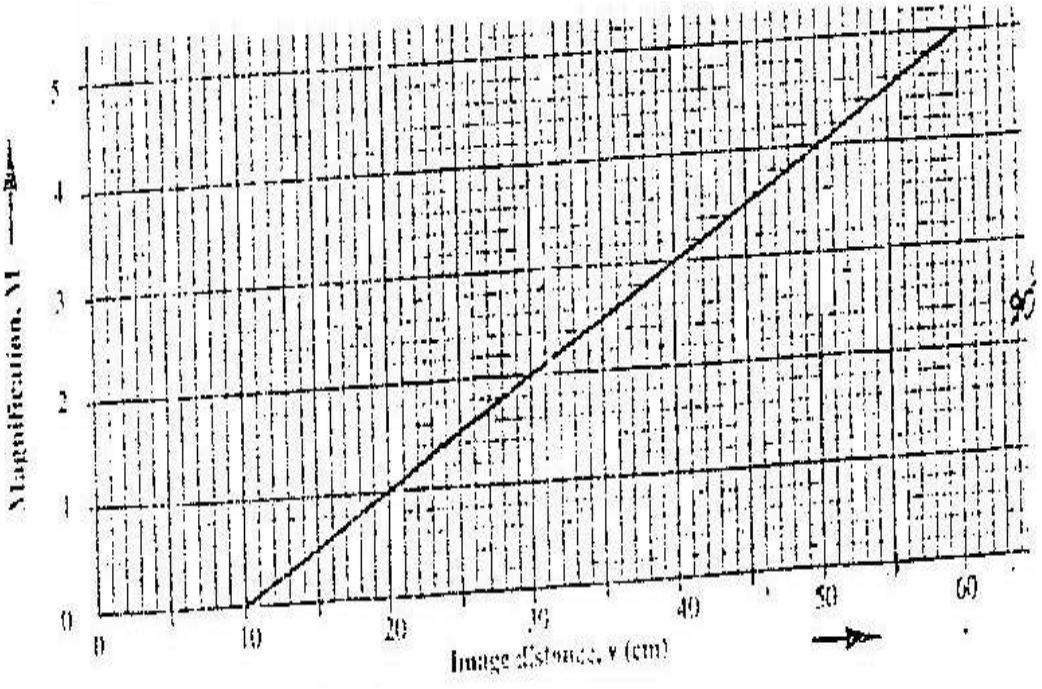


Fig. 1

By drawing suitable rays, locate and mark on the figure the position of the principal focus 'F' of the mirror. Determine the focal length f.

b) The graph in Fig. 2 shows the variation of magnification, M with image distance, V for a concave mirror.



Determine:

i) The object position when the image position is 45cm

ii) The focal length of the mirror.

8. 2001 Q20 P1

Fig. 13 shows a point object O placed in front of a concave mirror.
Draw appropriate rays to locate the image of the object.

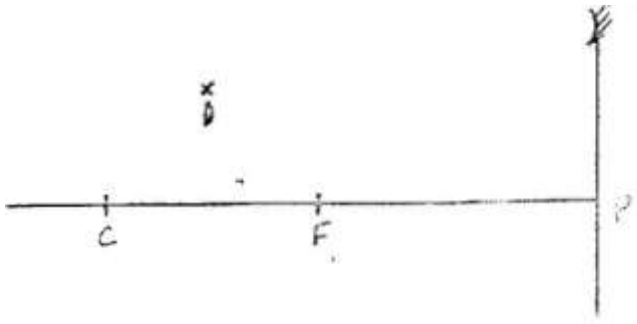
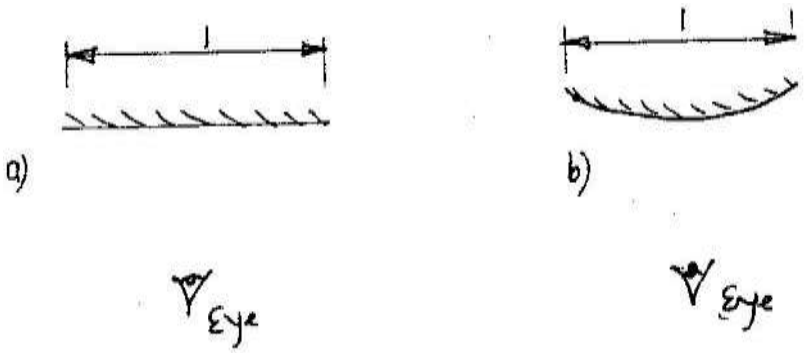


Fig. 13

9. 2003 Q29 P1

Figure 16 (a) and (b) show a convex mirror and a plane mirror of equal aperture.

Figure 16



By sketching a pair of incident and reflected rays for each (a) and (b) show how the convex mirror provides to the eye, a wider field of view than the plane mirror.

10. 2004 Q23 P1

Figure 12 shows a parabolic surface with a source of light placed at its focal point F

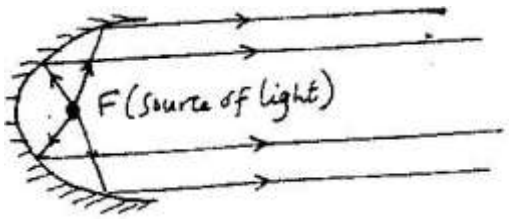


Fig. 12

Draw rays to show reflection from the surface when rays from the source strike the surface at points ABC and D.

11. 2005 Q22 P1

Fig. 12 shows a vertical object, O, placed in front of a convex mirror.

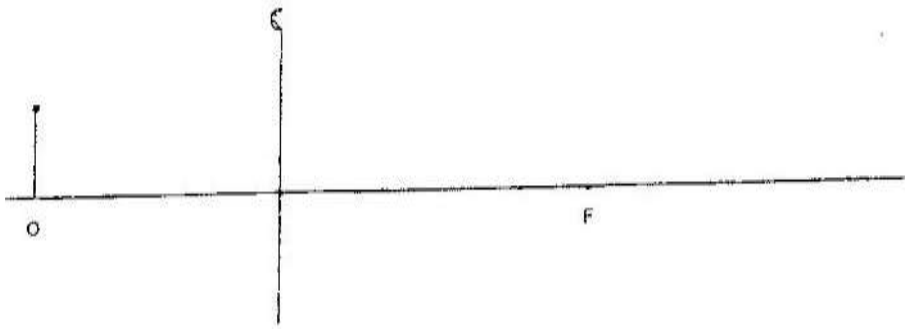


Fig 12

On the same diagram draw the appropriate rays and locate the image formed

(3 marks)

12. 2010 Q5 P2

Figure 4, shows a bright electric lamp placed behind a screen which has a hole covered with wire gauze. A concave mirror of focal length 25cm is placed in front of the screen. The position of the mirror is adjusted until a sharp image of the gauze is formed on the screen.

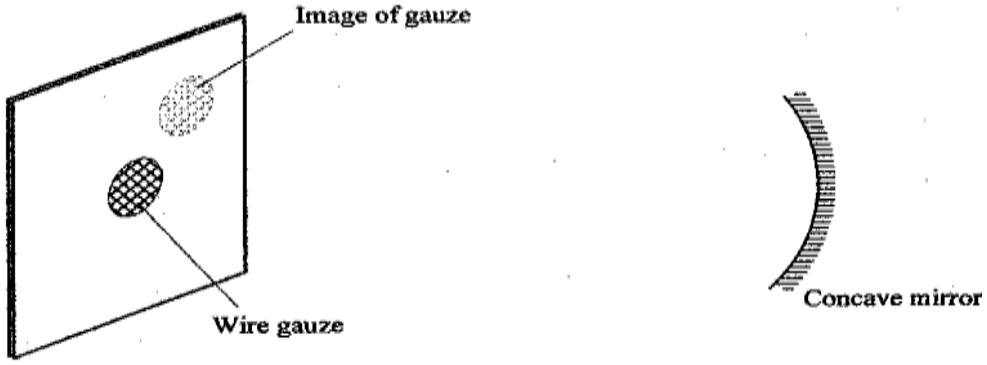


Figure 4

Determine the distance between the mirror and the screen.

13. 2012 Q17 P2

Figure 16, shows a graph of magnification against object distance, for an object placed in front of a lens of a focal length 20cm.

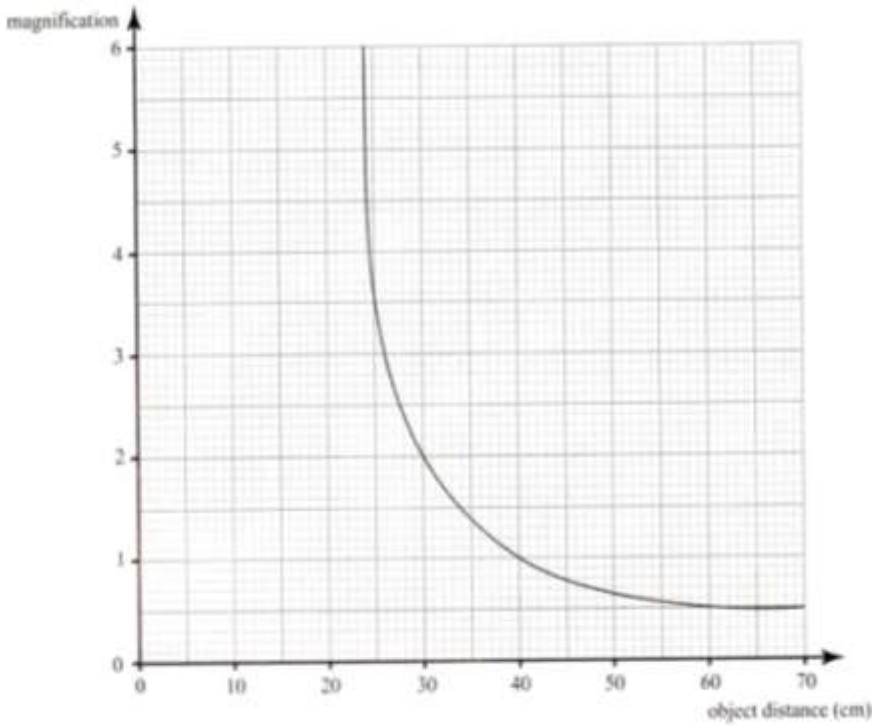


Figure 16

Using the graph

i. State the effect on the size of the image when the object distance is increased from 25cm (1 mark)

ii. Determine the distance between the object and the lens when the image is the same size as the object (2 marks)

iii. Determine the image distance when the object distance is 25cm (3 marks)

b) Figure 17 shows an object O placed in front of a converging mirror of focal length 15 cm.

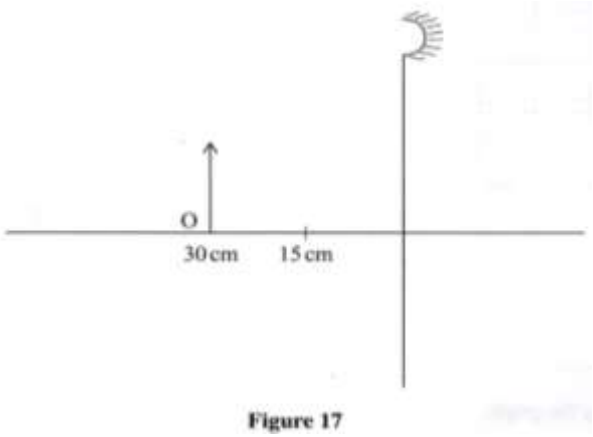


Figure 17

Draw on the figure a ray diagram to locate the image formed (3 marks)

c) State why parabolic reflectors are used in car headlights. (1 mark)