CHAPTER - 10

LIGHT – REFLECTION AND REFRACTION

ASSIGNMENT QUESTIONS SET – 2

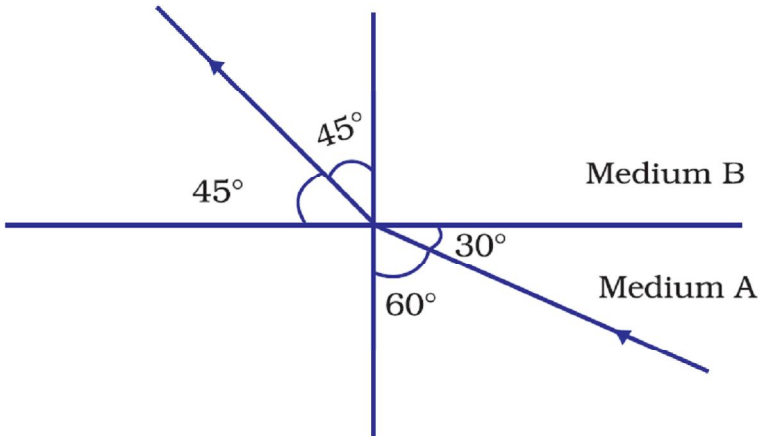
MULTIPLE CHOICE QUESTIONS

1. Which of the following can make a parallel beam of light when light from a point source is incident on it?
(a) Concave mirror as well as convex lens
(b) Convex mirror as well as concave lens
(c) Two plane mirrors placed at 90° to each other
(d) Concave mirror as well as concave lens

2. A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is formed at 30 cm in front of the mirror. The focal length of this mirror is
(a) – 30 cm (b) – 20 cm (c) – 40 cm (d) – 60 cm

3. Under which of the following conditions a concave mirror can form an image larger than the actual object?
(a) When the object is kept at a distance equal to its radius of curvature
(b) When object is kept at a distance less than its focal length
(c) When object is placed between the focus and centre of curvature
(d) When object is kept at a distance greater than its radius of curvature

4. The below Figure shows a ray of light as it travels from medium A to medium B. Refractive index of the medium B relative to medium A is
(a) $\frac{\sqrt{3}}{\sqrt{2}}$ (b) $\frac{\sqrt{2}}{\sqrt{3}}$ (c) $\frac{1}{\sqrt{2}}$ (d) $\sqrt{2}$



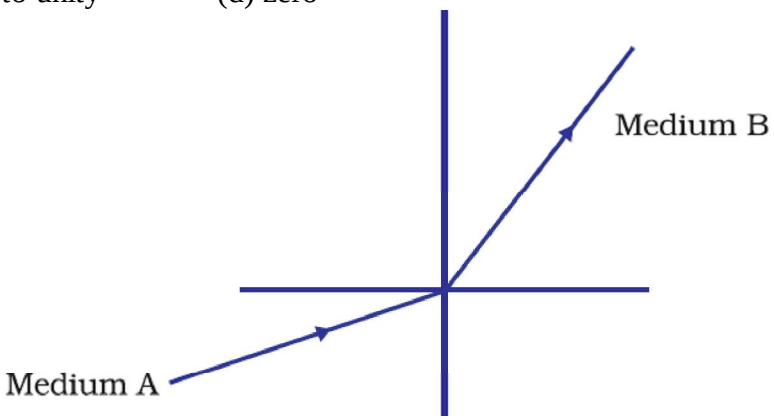
5. Which of the following statements is true?
(a) A convex lens has 4 dioptre power having a focal length 0.25 m
(b) A convex lens has –4 dioptre power having a focal length 0.25 m
(c) A concave lens has 4 dioptre power having a focal length 0.25 m
(d) A concave lens has –4 dioptre power having a focal length 0.25 m

6. Magnification produced by a rear view mirror fitted in vehicles
(a) is less than one (b) is more than one
(c) is equal to one
(d) can be more than or less than one depending upon the position of the object in front of it

7. A light ray enters from medium A to medium B as shown in below Figure. The refractive index of medium B relative to A will be

(a) greater than unity (b) less than unity

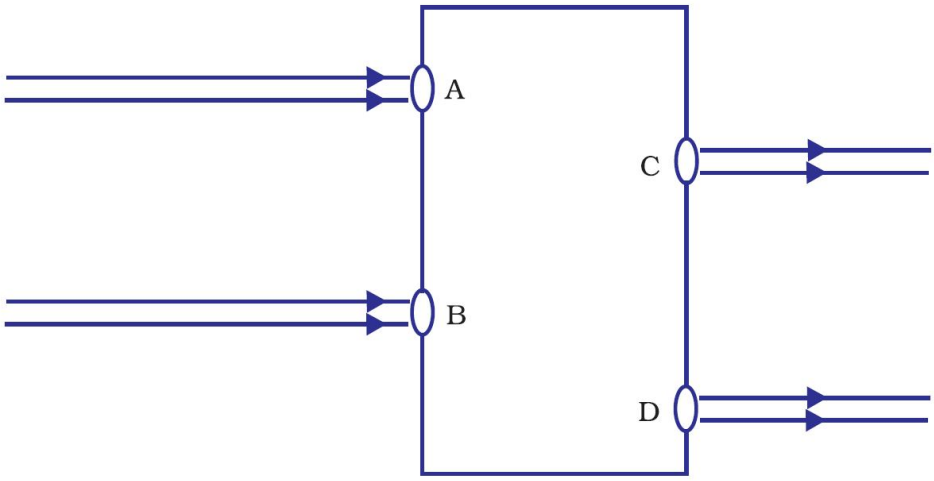
(c) equal to unity (d) zero



8. Beams of light are incident through the holes A and B and emerge out of box through the holes C and D respectively as shown in the below Figure. Which of the following could be inside the box?

(a) A rectangular glass slab (b) A convex lens

(c) A concave lens (d) A prism

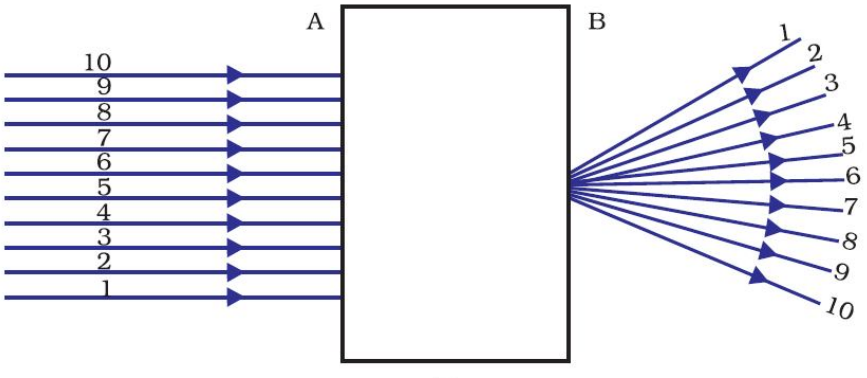


Box

9. A beam of light is incident through the holes on side A and emerges out of the holes on the other face of the box as shown in the below Figure. Which of the following could be inside the box?

(a) Concave lens (b) Rectangular glass slab

(c) Prism (d) Convex lens



Box

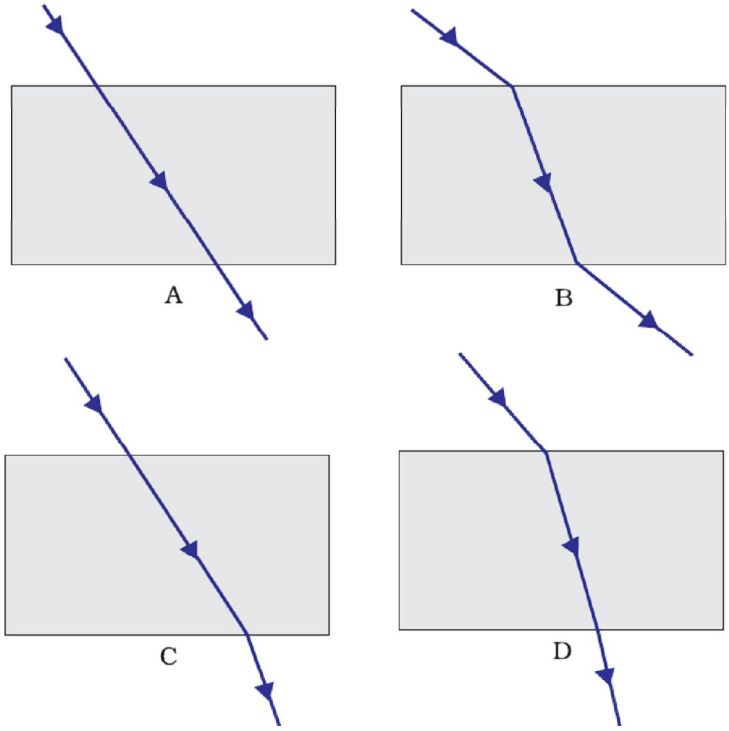
10. Rays from Sun converge at a point 15 cm in front of a concave mirror. Where should an object be placed so that size of its image is equal to the size of the object?
(a) 15 cm in front of the mirror
(b) 30 cm in front of the mirror
(c) between 15 cm and 30 cm in front of the mirror
(d) more than 30 cm in front of the mirror

11. A full length image of a distant tall building can definitely be seen by using
(a) a concave mirror (b) a convex mirror
(c) a plane mirror (d) both concave as well as plane mirror

12. In torches, search lights and headlights of vehicles the bulb is placed
(a) between the pole and the focus of the reflector
(b) very near to the focus of the reflector
(c) between the focus and centre of curvature of the reflector
(d) at the centre of curvature of the reflector

13. The laws of reflection hold good for
(a) plane mirror only (b) concave mirror only
(c) convex mirror only (d) all mirrors irrespective of their shape

14. The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown as A, B, C and D in Figure. Which one of them is correct?
(a) A (b) B (c) C (d) D



15. You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at same angle would bend the most?
(a) Kerosene (b) Water
(c) Mustard oil (d) Glycerine

16. A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.

(a) Plane, convex and concave
(b) Convex, concave and plane
(c) Concave, plane and convex
(d) Convex, plane and concave

17. Which of the following ray diagrams is correct for the ray of light incident on a concave mirror as shown in below Figure?

(a) Fig. A (b) Fig. B (c) Fig. C (d) Fig. D

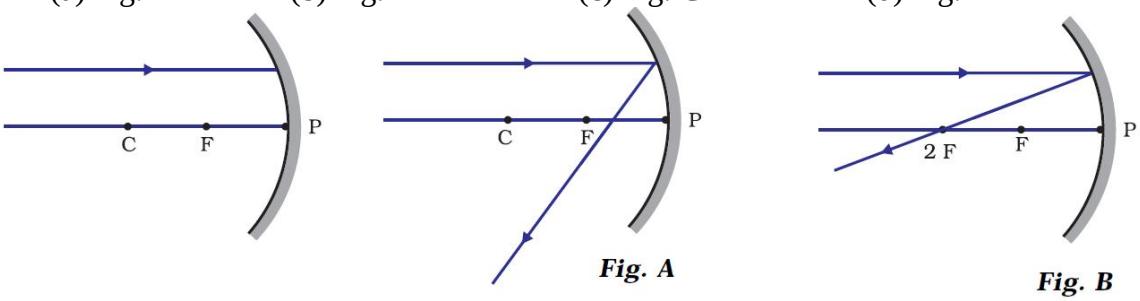


Fig. A *Fig. B*

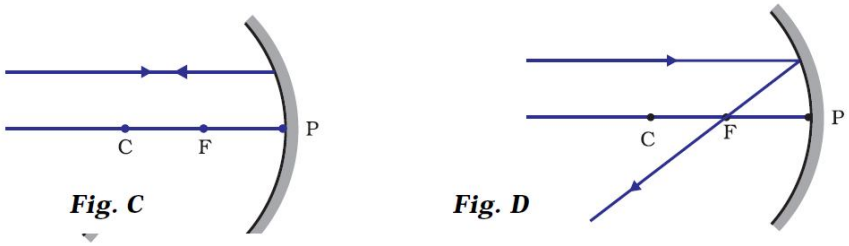


Fig. C *Fig. D*

18. Which of the following ray diagrams is correct for the ray of light incident on a lens shown in below Figure?

(a) Fig. A (b) Fig. B (c) Fig. C (d) Fig. D

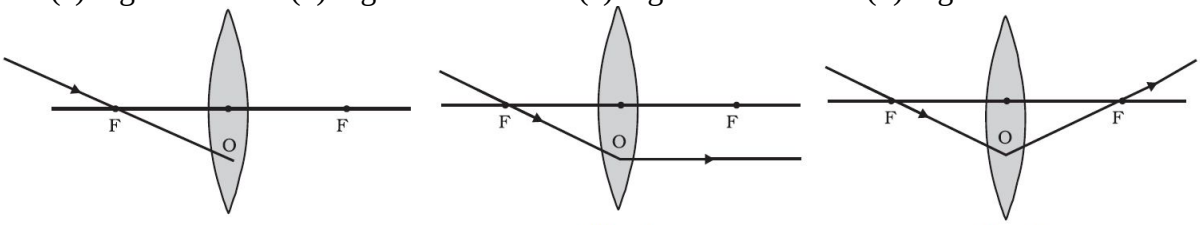


Fig. A *Fig. B*

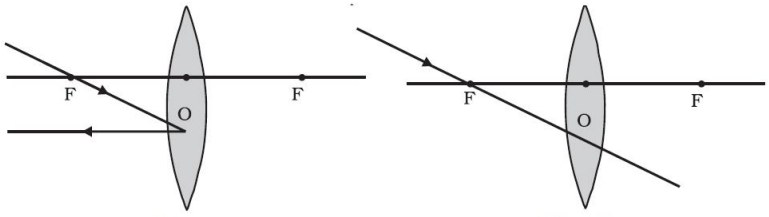


Fig. C *Fig. D*

19. In which of the following, the image of an object placed at infinity will be highly diminished and point sized?

(a) Concave mirror only
(b) Convex mirror only
(c) Convex lens only
(d) Concave mirror, convex mirror, concave lens and convex lens

20. The linear magnification produced by a convex mirror is always positive. This is because
(a) Convex mirror is a small mirror.
(b) Image formed by a convex mirror is always smaller in size than the object.
(c) Image formed by a convex mirror is real.
(d) Image formed by a convex mirror is always virtual and erect.

21. In which of the following mirrors, image of an object is always virtual, erect and smaller in size than the size of object?
(a) convex mirror
(b) concave mirror
(c) plane mirror
(d) none of the these

22. A boy runs towards a plane mirror with a velocity of 2m/s. With what speed will her image move towards him?
(a) 2m/s
(b) 0
(c) 4m/s
(d) none of the these

23. The linear magnification of the concave lens is always positive but less than one. This is because
(a) concave lens forms real images only.
(b) concave lens forms virtual images only.
(c) concave lens forms virtual, erect and diminished images irrespective of the position of the object.
(d) none of the these

24. The linear magnification of the concave lens is – 1, when object is kept at
(a) at infinity
(b) at focus
(c) at $2F_1$
(d) between F_1 and $2F_1$.

25. The focal length of the combination of convex lens of power 1D and concave lens of power – 1.5 D is
(a) – 2 m (b) 2 m
(c) 2.5 m (d) 0.5 m

SHORT ANSWER QUESTIONS

26. Identify the device used as a spherical mirror or lens in following cases, when the image formed is virtual and erect in each case.
(a) Object is placed between device and its focus, image formed is enlarged and behind it.
(b) Object is placed between the focus and device, image formed is enlarged and on the same side as that of the object.
(c) Object is placed between infinity and device, image formed is diminished and between focus and optical centre on the same side as that of the object.
(d) Object is placed between infinity and device, image formed is diminished and between pole and focus, behind it.