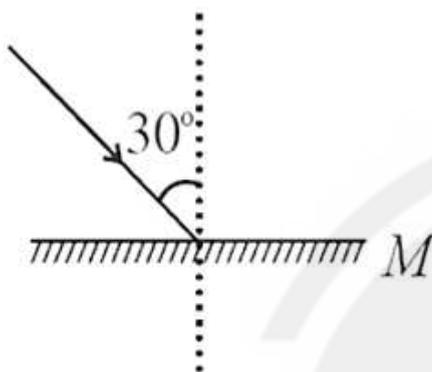


# Prayas JEE (2025)

## Physics Ray Optics

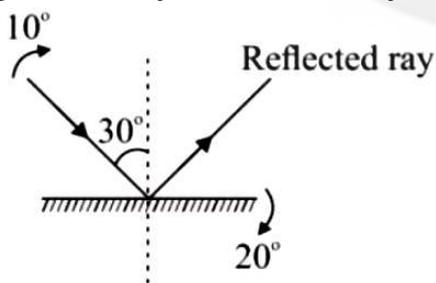
**DPP: 1**

**Q1** Find the angle of deviation (both clockwise and anticlockwise) suffered by a ray incident on a plane mirror, (as shown in figure) at an angle of incidence  $30^\circ$ .



- (A)  $120^\circ$  acw
- (B)  $90^\circ$  cw
- (C)  $120^\circ$  cw
- (D) None of these

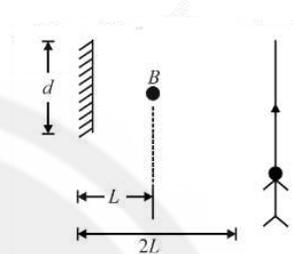
**Q2** Figure shows a plane mirror on which a light ray is incident. If the incident light ray is turned by  $10^\circ$  and the mirror by  $20^\circ$ , as shown, find the angle turned by the reflected ray.



- (A)  $30^\circ$  cW
- (B)  $60^\circ$  cw
- (C)  $90^\circ$  cw
- (D)  $120^\circ$  cW

**Q3** A point source of light  $B$  is placed at a distance  $L$  in front of the centre of a mirror of width  $d$

hung vertically on a wall. A man walks in front of the mirror along a line parallel to the mirror at a distance  $2L$  from it as shown. The greatest distance over which he can see the image of the light source in the mirror is



- (A)  $d/2$
- (B)  $d$
- (C)  $2d$
- (D)  $3d$

**Q4** A converging beam of light rays is incident on a concave spherical mirror whose radius of curvature is  $0.8\text{ m}$ . Determine the position of the point on the optical axis of the mirror where the reflected rays intersect, if the extensions of the incident rays intersect the optical axis  $40\text{ cm}$  from the mirrors pole.

- (A)  $0.2\text{ m}$  from poll of mirror
- (B)  $0.1\text{ m}$  from poll of mirror
- (C)  $0.3\text{ m}$  from poll of mirror
- (D) None of these

**Q5** A man uses a concave mirror for shaving. He keeps his face at a distance of  $20\text{ cm}$  from the mirror and gets an image which is  $1.5$  times enlarged. Find the focal length of the mirror.

- (A)  $60\text{ cm}$
- (B)  $40\text{ cm}$
- (C)  $30\text{ cm}$
- (D) None of these

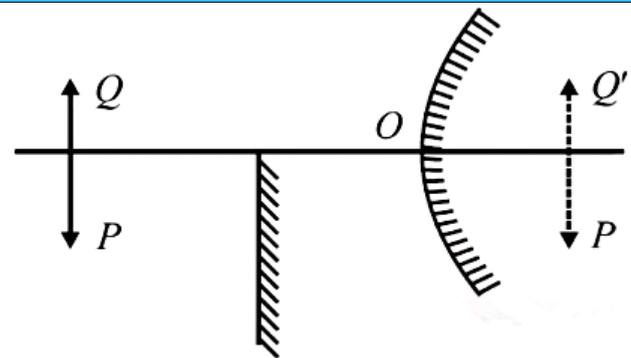


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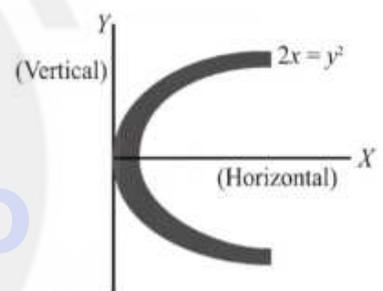
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- Q6** There is a convex mirror of focal length  $f$ . If image of object is formed at a distance  $f/2$ , then position of object will be  
 (A)  $f/2$  (B)  $-f/2$   
 (C)  $f/3$  (D)  $-f$
- Q7** An object of length 5 cm is placed at a distance 1 m from a concave mirror. If radius of curvature of mirror is 20 cm. Size of image will be:  
 (A) 0.11 cm  
 (B) 0.50 cm  
 (C) 0.55 cm  
 (D) 0.60 cm
- Q8** An object is placed at a distance of 40 cm in front of a concave mirror of focal length 20 cm. The image produced is:  
 (A) Virtual and inverted  
 (B) Real and erect  
 (C) Real inverted and diminished  
 (D) Real, inverted and of same size as the object
- Q9** A convex mirror is used to form the image of a real object. Then which of the following statements is wrong?  
 (A) The image lies between the pole and the focus  
 (B) The image is diminished in size  
 (C) The image is erect  
 (D) The image is real
- Q10** An object is placed at a distance of 40 cm from a convex spherical mirror as shown in figure. The radius of curvature of the convex mirror is 20 cm. At what distance from the object a plane mirror should be placed so that the image in the spherical mirror and plane mirror may be in one plane



- (A) 20 cm  
 (B) 24 cm  
 (C) 28 cm  
 (D) 32 cm

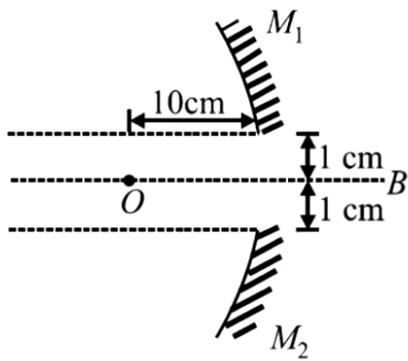
**Q11** The reflecting surface is represented by the equation  $2x = y^2$  as shown in fig. A ray travelling horizontal becomes vertical after reflection. The co-ordinates of the point of incidence are :



- (A)  $(1/2, 1)$   
 (B)  $(1, 1/2)$   
 (C)  $(1/2, 1/2)$   
 (D)  $(3/2, 2)$

**Q12** A concave mirror of focal length 20 cm is cut into two parts from the middle and these two parts are moved perpendicularly by a distance 1 cm from the previous principal axis AB. Find the distance between the images formed by the two parts?





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# Answer Key

Q1 A  
Q2 A  
Q3 D  
Q4 A  
Q5 A  
Q6 D

Q7 C  
Q8 D  
Q9 D  
Q10 B  
Q11 D  
Q12 (2 cm)



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