CLASS : XII

Chapter: Reflection of light

Topic: Spherical mirror, linear and angular magnification.

Multiple Choice Questions :

1 x 15 = 15

1: Radius of curvature of convex mirror is 40 cm and the size of the object is twice as that of image then the image distance is

(a) 10cm　　　(b) 20cm　　　(c) 40cm　　　(d) 30cm

Ans. (a)10 cm

2 : A short linear object, of length l, lies along the axis of a concave mirror, of focal length f, at a distance d from the pole of the mirror. The size of the image is then (nearly)

(a) $\dfrac{lf}{d+f}$　　　(b) $\dfrac{d+f}{lf}$　　(c) $\dfrac{lf^2}{(d+f)^2}$　　　(d) $\dfrac{l(d+f)^2}{f^2}$

Ans. (a) $\dfrac{lf}{d+f}$

3: A concave mirror of focal length f produces an image n times the size of the object. If the image is real then distance of the object from the mirror is

(a) $(n-1)f$　　　(b) $\dfrac{n-1}{n}f$　　　(c) $\dfrac{n+1}{n}f$　　　(d) $(n+1)f$

Ans. (c) $\dfrac{n+1}{n}f$

4: All the following statements are correct except
(a) The magnification produced by a convex mirror is always less than one.
(b) A virtual, erect, same-sized image can be obtained by using a plane mirror.
(c) A virtual, erect, magnified image can be formed using a concave mirror.
(d) A real, inverted, same-sized image can be formed using a convex mirror.

Ans.(d) A real, inverted, same-sized image can be formed using a convex mirror.

5: A plane mirror produces a magnification of

(a) - 1　　　(b) + 1　　(c) zero　(d) between 0 and + infinity

Ans. (b) + 1

6: 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. mirror.

Ans. (d) real, inverted, and of same size as the object. mirror.

7: The magnification of the image when an object is placed at a distance x from the principal focus of a mirror of focal length f is

(a) $\dfrac{x}{f}$　　　(b) $I+\dfrac{f}{x}$　　　(c) $\dfrac{f}{x}$　　　(d) $I-\dfrac{f}{x}$

Ans. (c) $\dfrac{f}{x}$

8: A plane mirror is approaching a person at a speed of 5cm s^{-1}. At what speed will his image approach him ?

(a) 10 cms^{-1} (b) 5 cms^{-1} (c) 20 cms^{-1} (d) 15 cms^{-1}

Ans.(a) 10 cms^{-1}

9: A concave mirror gives an image three times as large as the object placed at a distance of 20 cm from it. For the image to be real, the focal length should be

(a) 10 cm   (b) 15 cm   (c) 20 cm   (d) 30 cm

Ans. (b) 15 cm

10: A concave mirror of focal length f (in air) is immersed in water ($\mu = \dfrac{4}{3}$). The focal length of the mirror in water will be

(a) f (b) $\dfrac{4}{3}f$ (c) $\dfrac{3}{4}f$ (d) $\dfrac{7}{3}f$

Ans. (a) f

11: A motor car is fitted with a convex driving mirror of focal length 20 cm. A second car 2m broad and 1-6 m high is 6m away from the first car. The position of second car as seen in mirror of the first car is

(a) 15.4 cm   (b) 17.4 cm   (c)19.4 cm   (d) 25 cm

Ans. (c) 19.4 cm

12: A convex mirror of focal length f produces an image $\dfrac{1}{n}$ th of the size of the object. The distance of the object from the mirror is

(a) $(n-1)f$ (b) $\dfrac{1}{n}f$ (c) $(n+1)f$ (d) nf.

Ans. (a) $(n-1)f$

13: A convex mirror has a focal length of 20 cm. A convergent beam tending to converge to a point 20 cm behind convex mirror on principal axis falls on it. The image is formed at

(a) infinity   (b) 40 cm   (c) 20 cm   (d) 10 cm

Ans. (a) infinity

14: It is desired to photograph the image of an object placed at a distance of 3m from a plane mirror. The camera which is at a distance of 4.5mfrom the mirror should be focussed for a distance of

(a) 3 m   (b) 4.5 m   (c) 6 m   (d) 7.5 m

Ans. (d) 7.5 m

15: What is the distance of a needle from a concave mirror of focal length 10 cm for which a virtual image of twice its height is formed ?
(a) 2.5 cm   (b) 5 cm   (c) 8 cm   (d) 9.1 cm

Ans. (b) 5 cm

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