

# O P JINDAL SCHOOL, SAVITRINAGAR

## ASSIGNMENT

### CLASS X PHYSICS

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- 1 An object is placed at a distance of 0.25 m in front of a plane mirror. The distance between the object and image will be  
(a) 0.25 m (b) 1.0 m  
(c) 0.5 m (d) 0.125 m

ANS: (c) Distance between object and image =  $0.25 + 0.25 = 0.5$  m

- 2 The angle of incidence for a ray of light having zero reflection angle is  
(a) 0 (b)  $30^\circ$   
(c)  $45^\circ$  (d)  $90^\circ$

ANS: (a) For reflecting surface  $\angle i = \angle r$

- 3 For a real object, which of the following can produce a real image?  
(a) Plane mirror (b) Concave mirror  
(c) Concave lens (d) Convex mirror

ANS: (b) Only concave mirror can produce a real image for the any position of object between its focus and infinity.

- 4 Which of the following mirror is used by a dentist to examine a small cavity?  
(a) Convex mirror  
(b) Plane mirror  
(c) Concave mirror  
(d) Combination of convex and concave mirror

ANS: (c) Concave mirror forms erect and enlarged image when held close to the cavity.

- 5 An object at a distance of 30 cm from a concave mirror gets its image at the same point. The focal length of the mirror is  
(a)  $-30$  cm (b) 30 cm  
(c)  $-15$  cm (d)  $+15$  cm

ANS: (c) When object is placed at  $2F$ , the image formed by concave mirror is also at  $2F$ .  
So  $2F = -30$  or  $F = -15$  cm.

- 6 An object at a distance of +15 cm is slowly moved towards the pole of a convex mirror. The image will get  
 (a) shortened and real  
 (b) enlarged and real  
 (c) enlarge and virtual  
 (d) diminished and virtual

ANS: (d) Convex mirror always formed virtual and diminished image.

- 7 A concave mirror of radius 30 cm is placed in water. It's focal length in air and water differ by  
 (a) 15 (b) 20  
 (c) 30 (d) 0

ANS: (d) The focal length of spherical mirror does not depends on the surrounding medium.

- 8 A concave mirror of focal length 20 cm forms an image having twice the size of object. For the virtual position of object, the position of object will be at  
 (a) 25 cm (b) 40 cm  
 (c) 10 cm (d) At infinity

$$m = -\frac{v}{u} = +2 \Rightarrow v = -2u$$

$$\text{As } \frac{1}{u} + \frac{1}{v} = \frac{1}{f}$$

$$\therefore \frac{1}{u} + \frac{1}{-2u} = \frac{1}{-20} \Rightarrow \frac{1}{2u} = \frac{1}{-20}$$

$$\Rightarrow u = -10 \text{ cm}$$

ANS: (c) For virtual image,  $\Rightarrow$

- 9 The image formed by concave mirror is real, inverted and of the same size as that of the object. The position of object should be  
 (a) at the focus  
 (b) at the centre of curvature  
 (c) between focus and centre of curvature  
 (d) beyond centre of curvature

ANS: (c) When object lies at C of a concave mirror, image is also formed at 'C' and having same size real and inverted.

- 10 The nature of the image formed by concave mirror when the object is placed between the focus (F) and centre of curvature (C) of the mirror observed by us is  
 (a) real, inverted and diminished  
 (b) virtual, erect and smaller in size

- (c) real, inverted and enlarged
- (d) virtual, upright and enlarged

ANS: (c) When object lies between C and F, the real, inverted and enlarged image is formed beyond C.