

Optics and Optical Instruments

1. For a total internal reflection, which of the following is correct?

- (a) Light travels from rarer to denser medium.
- (b) Light travels from denser to rarer medium.
- (c) Light travels in air only.
- (d) Light travels in water only.

▼ Answer

Answer: b

2. Critical angle of glass is θ_2 and that of water is θ_1 . The critical angle for water and glass surface would be ($\mu_g = 3/2$, $\mu_w = 4/3$).

- (a) less than θ_2
- (b) between θ_1 and θ_2
- (c) greater than θ_2
- (d) less than θ_1

▼ Answer

Answer: c

- (c) greater than θ_2
- (d) less than θ_1

▼ Answer

Answer: c

3. Mirage is a phenomenon due to
- (a) refraction of light
 - (b) reflection of light
 - (c) total internal reflection of light
 - (d) diffraction of light.

▼ Answer

Answer: c

4. A convex lens is dipped in a liquid whose refractive index is equal to the refractive index of the lens. Then its focal length will
- (a) become zero
 - (b) become infinite
 - (c) become small, but non-zero
 - (d) remain unchanged

▼ Answer

Answer: b

5. Which of the following forms a virtual and erect image for all positions of the object?
- (a) Concave lens
 - (b) Concave mirror
 - (d) Convex mirror
 - (d) Both (a) and (c)

▼ Answer

Answer: d

6. Two lenses of focal lengths 20 cm and – 40 cm are held in contact. The image of an object at infinity will be formed by the combination at
- (a) 10 cm
 - (b) 20 cm
 - (c) 40 cm
 - (d) infinity

▼ Answer

Answer: c

7. Two beams of red and violet color are made to pass separately through a prism (angle of the prism is 60°). In the position of minimum deviation, the angle of refraction will be

- (a) 30° for both the colors
- (b) greater for the violet color
- (c) greater for the red color
- (d) equal but not 30° for both the colors

▼ Answer

Answer: a

8. Which of the following colours of white light deviated most when passes through a prism?

- (a) Red light
- (b) Violet light
- (c) Yellow light
- (d) Both (a) and (b)

▼ Answer

Answer: b

9. An under-water swimmer cannot see very clearly even in absolutely clear water because of

- (a) absorption of light in water
- (b) scattering of light in water
- (c) reduction of speed of light in water
- (d) change in the focal length of eye lens

▼ Answer

Answer: d

10. An astronomical refractive telescope has an objective of focal length 20 m and an eyepiece of focal length 2 cm. Then

- (a) the magnification is 1000
- (b) the length of the telescope tube is 20.02 m
- (c) the image formed of inverted
- (d) all of these

▼ Answer

Answer: d

11. A rod of length 10 cm lies along the principal axis of a concave mirror of focal length 10 cm in such a way that its end closer to the pole is 20 cm away from the mirror. The length of the image is
- (a) 10 cm
 - (b) 15 cm
 - (c) 2.5 cm
 - (d) 5 cm

▼ **Answer**

Answer: d
