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

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2. Critical angle of glass is θ_2 and that of water is θ_2. 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

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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

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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

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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

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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

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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

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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

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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

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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

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11. A rod of length 10 cm lies along the principal axis of a concave mirror of focal length 10 ’em 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
