The Brigade School @ G and W

Total points 15.5/20

Class 10 Physics Revision Ws 1 Ch: Light

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TBSG

✓ 1. How is the refractive index of a material related? * 2/2

- ○ μ =real depth/apparent depth and μ =v/c
- ○ μ =apparent depth/real depth and μ =v/c
- ◉ μ =real depth/apparent depth and μ =c/v ✓
- ○ μ =apparent depth real depth and μ =c/v
- ○ Other:

✓ 2. Which of these conditions must be full filled for TIR? * 2/2

- ○ Light should travel from rarer to denser medium and angle of incidence > than critical angle
- ◉ Light should travel from denser to medium and angle of incidence > than critical angle ✓
- ○ Light should travel from rarer to denser medium and critical angle > than angle angle of incidence
- ○ Light should travel from denser to rarer medium and critical angle > than angle angle of incidence

✓ 3. Angle of deviation is related to refractive index and wavelength in the following way: * 2/2

- ○ Directly proportional to refractive index and wavelength
- ○ Inversely proportional to refractive index and wavelength
- ○ Directly proportional to wavelength and inversely proportional to refractive index
- ◉ Directly proportional to refractive index and inversely proportional to wavelength ✓

✗ 4. A lens forms an upright and diminished image of an object placed at the focal point of a lens. (a) Name the lens. (b) Draw a ray diagram to show the image formation. * 1/3

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✓ 5. (a) Write the relationship between angle of incidence and angle of refraction for a given pair of media. (b) Why does a ray of light bend when it moves from one medium to another of different optical densities, (c) Write one condition when bending of light will not happen when the ray travels from one medium into another. * 3/3

(a) sin i/sin r = constant
(b) A ray of light bends when it moves from one medium to another of different optical densities because of change in speed of light in going from one medium to another.
(c) The condition is that refractive index should remain same.

Feedback

a. ref. index = sin i/sinr [1 mark]
b. because the speed of light changes when the ray travels from one medium to another [1 mark]
c. When ray is incident normally on the surface separating the two media. [1 mark]

✗ 6. (a) The speed of light in glass is 2 x 10^5 km /s. What is the refractive index of glass? (b) What change is observed in the appearance of a pencil when it is put in a container of water? (c) Name the phenomenon responsible for this change. * 1.5/4

(a) Refractive index is 8/9.
(b) A part of immersed pencil looks short and raised up.
(c) Refraction of light is the phenomenon.

Feedback

(a) Ref index of glass = c/v = 3 x 10^8/2 x 10^8 m/s = 1.5 {1+1}
(b) The pencil appears to be bent [1]
(c) Refraction of light [1]

✓ 7. (a) Where should an object be placed to get an image of the same size in a convex lens? What will the nature of the image be? (b) Draw a ray diagram in support of your answer. 4/4

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Feedback

(a) At 2F1 [1]
(b) Real and inverted [1]
(c) Ray diagram [2]