

Unit 8 - Week 6

Course outline

How to access the portal?

Week 0 Assignment 0

Week 1

Week 2

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Week 4

Week 5

Week 6

● Lecture 27 : Discussion on the angle of incidence and corresponding deviation of light through a prism and determination of the angle of minimum deviation for a given prism from the plot of the angle of incidence versus deviation.

○ Lecture 28 : Determination of the angle of minimum deviation from (i-D) plot for a given prism and hence to determine the refractive index of the given prism.

○ Lecture 29 : Determination of the calibration plot of deviation versus wavelength for a given prism and hence determination of the wavelength of the unknown light source using the calibration plot

○ Lecture 30 : Determination of the dispersive power, Cauchy constant and resolving power of a given prism.

○ Quiz : Assignment 6

○ Feedback for Week 6

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Assignment Solution

Text Transcripts

Assignment 6

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-11, 23:59 IST.

1) Two thin (small angled) prisms are combined to produce dispersion without deviation. One prism has angle 5° and refractive index 1.56. If the other prism has refractive index 1.7, what is its angle? 1 point

- (a) 3°
(b) 4°
(c) 5°
(d) 6°

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

2) A prism of angle 5° made of crown glass of r.i. 1.52 is placed in contact with another prism made from fint glass of r.i. 1.63 with their bases in opposite way. It is found that the ray comes out from the prism combination without deviation. What is the angle of second prism? 1 point

- (a) 4.0°
(b) 4.24°
(c) 4.13°
(d) 5.51°

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

c

3) A ray of light incident at an angle of 50° is reflected through the prism in minimum deviation position. The angle of the prism is 60° . Find the angle of minimum deviation and the refractive index of the material of prism 1 point

- (a) $40^\circ, 1.582$
(b) $45^\circ, 1.732$
(c) $50^\circ, 1.50$
(d) None of those

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

d

4) The minimum deviation produced by a hollow prism filled with certain liquid is found to be 30° . The angle of the prism is 60° . Calculate the r.i. of the liquid. 1 point

- (a) 1.33
(b) 1.414
(c) 1.45
(d) None of those

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

5) A 60° prism has refractive index 1.75 for a given light. Find the angle of minimum deviation 1 point

- (a) 35.35°
(b) 45.0°
(c) 55.25°
(d) 62.01°

- a
 b
 c
 d

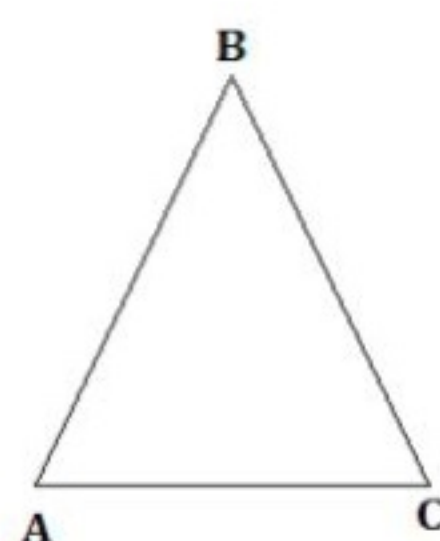
No, the answer is incorrect.

Score: 0

Accepted Answers:

d

6) An equilateral prism ABC is of r.i. = 1.5. Calculate the angle of incidence of a ray on the face AB for which the ray ray will totally reflect at the critical angle at the face BC 1 point



- (a) 20.5°
(b) 21.22°
(c) 25.5°
(d) 27.9°

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

d

7) An equilateral glass prism (r.i.= 1.6) is immersed in water (r.i. = 1.33). Calculate the angle of deviation produced for a ray of light incident at 40° on one face of the prism. 1 point

- (a) 24°
(b) 14°
(c) 32°
(d) 18°

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

8) A glass slab of refractive index 1.5 and thickness 4.5 cm is kept close to a concave mirror of focal length 20 cm so that the face of the slab is perpendicular to the principal axis of the mirror. A point object is placed on the principal axis so that its image coincides with itself. Then, the distance of the object from the mirror is 1 point

- (a) 40cm
(b) 41.5cm
(c) 43cm
(d) 37cm

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

9) The sun subtends an angle θ radian on the surface of the earth. If a convex lens of focal length F is used to obtain a real image of the sun on a screen, the diameter of the image will be 1 point

- (a) $F\theta$
(b) $F\theta/2$
(c) F/θ
(d) $2F\theta$

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

a

10) A transparent cube of edge 9cm contains a small air bubble which appears to be at a distance of 4 cm when viewed normally through one face and at a distance of 2 cm when viewed normally through the opposite face. The refractive index of the material of the cube is 1 point

- (a) 1.4
(b) 1.45
(c) 1.5
(d) 1.55

- a
 b
 c
 d

No, the answer is incorrect.

Score: 0

Accepted Answers:

c