

Unit 10 - Week 8

Course outline

How to access the portal?

Week 0 Assignment 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

● Lecture 36 : Interference phenomena by Newton ring (Theory)

● Lecture 37 : Interference phenomena by Newton ring (experiment)

● Lecture 38 : Michelson interferometer (Theory)

○ Lecture 39 : Michelson interferometer (Experiment)

● Lecture 40 : Theory of diffraction

○ Quiz : Assignment 8

○ Feedback for Week 8

Week 9

Week 10

Week 11

Week 12

Assignment Solution

Text Transcripts

Assignment 8

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

Due on 2019-09-25, 23:59 IST.

1) The modification of the distribution of light energy due to the superposition of two or more waves is called? 1 point

- (a) Interference
 (b) Diffraction
 (c) Refraction
 (d) Polarization

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) Interference

2) In optics, waves having a single frequency and wavelength are said to be 1 point

- (a) Transverse waves
 (b) Composite waves
 (c) Monochromatic waves
 (d) None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) Monochromatic waves

3) During interference by bi-prism, is the total energy conserved or not? 1 point

- (a) No
 (b) Yes
 (c) Conserved for constructive interference only
 (d) Partly conserved

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) Yes

4) The phenomenon of interference is shown 1 point

- (a) by transverse waves only.
 (b) By longitudinal waves only.
 (c) By both longitudinal and transverse waves.
 (d) None of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) By both longitudinal and transverse waves.

5) In a double slit experiment, the separation between the slits is 1 mm and the distance between the double slit and the screen is 1m. If the slits are illuminated by monochromatic light of wave length 6000 \AA , what is the separation between the 2nd dark bands on either side of the central band? 1 point

- (a) 0.9 mm
 (b) 1.2 mm
 (c) 1.8 mm
 (d) 3 mm

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) 1.8 mm

6) Calculate the thickness of air film at the 10th dark ring in a Newton's rings system, viewed normally by a reflected light of wave length 500 nm. The diameter of the 10th dark ring is 2 mm. 1 point

- (a) 1.5 mm
 (b) $2.5 \mu\text{m}$
 (c) $3.2 \mu\text{m}$
 (d) 0.5 mm

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) $2.5 \mu\text{m}$

7) In a Newton's ring experiment, the diameter of the 5th ring is 0.30 cm and diameter of the 15th ring is 0.62cm. Find the diameter of the 25th ring 1 point

- (a) 0.8239 cm
 (b) 0.5355 cm
 (c) 1.055 cm
 (d) 1.235 cm

No, the answer is incorrect.
Score: 0

Accepted Answers:
(a) 0.8239 cm

8) The shape of interference fringes produced in Bi-Prism experiment is: 1 point

- (a) Straight line
 (b) Elliptical
 (c) Parabola
 (d) Hyperbola

No, the answer is incorrect.
Score: 0

Accepted Answers:
(d) Hyperbola

9) In Michelson interferometer: 1 point

- (a) Two plane mirrors and one concave lens are used
 (b) Two plane mirrors and one half silvered glass plate are used.
 (c) Two convex lenses and one half silvered glass plate are used.
 (d) Two concave mirror and one half silvered glass plate are used.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b) Two plane mirrors and one half silvered glass plate are used.

10) Base angle of a bi-prism can be determined by 1 point

- (a) Studying interference by bi-prism
 (b) Studying Newton's ring experiment
 (c) Studying interference by Michelson interferometer
 (d) All of options (a) (b) and (c) are true

No, the answer is incorrect.
Score: 0

Accepted Answers:
(c) Studying interference by Michelson interferometer