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Reg. No. :

Code No. : 20034 E Sub. Code : CMPH 21

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2025.

Second Semester

Physics – Core

OPTICS AND ACOUSTICS

(For those who joined in July 2021 and 2022 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. The prism's dispersive power is determined by
 - (a) The shape of the prism
 - (b) The material of the prism
 - (c) The angle of the prism
 - (d) Height of the prism

2. The Ramsden eyepiece is sometimes referred to as _____ eyepiece.
 - (a) negative
 - (b) large
 - (c) small
 - (d) positive
3. If wavelength of light incident on a wedge shaped film is increased, the fringe width
 - (a) increases
 - (b) decreases
 - (c) remain same
 - (d) first increases and then decreases
4. The Newton's rings are formed due to the phenomenon of _____
 - (a) interference in thin film
 - (b) diffraction
 - (c) interference due to pin holes
 - (d) diffraction due to circular aperture
5. What is the variation in the pattern observed for single slit Fresnel diffraction than single slit Fraunhofer Diffraction?
 - (a) The pattern is not hyperbolic
 - (b) The fringes are too thin
 - (c) The region of minimum intensity is not completely dark
 - (d) The fringes are colored

6. In Nicol prism two parts of the crystal are cemented together with _____ layer.
- (a) Oil (b) Silica
(c) Canada balsam (d) Glycerin
7. For a body moving with simple harmonic motion, the number of cycles per second, is known as its _____.
- (a) Oscillation (b) Amplitude
(c) Periodic time (d) Frequency
8. When a sonometer wire vibrates with one or more loops, the waves produced in the wire are _____.
- (a) Longitudinal and progressive
(b) Transverse and progressive
(c) Transverse and stationary
(d) Longitudinal and stationary
9. Piezoelectricity means _____.
- (a) Electric polarization
(b) Electric dielectric
(c) Pressure electricity
(d) Polar dielectric

10. How are sound waves with a frequency of 20Hz to 20,000Hz termed?
- (a) Inaudible sounds
(b) Infrasonics
(c) Ultrasonics
(d) Audible sound

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe about the Spherical aberration in lenses.
- Or
- (b) Annotate aplanatic points.
12. (a) Analyze the theory of interference.
- Or
- (b) Summarize testing the plainness of surfaces.

23. (a) Analyze the difference in interest and dividend payments in a lease arrangement versus

(b)

(c) Analyze interest activity.

24. (a) Explain the concept of historical cost.

(b)

(c) Explain stock-theoretic bond.

25. (a) List out the features of different assets.

(b)

(c) Analyze different investment tools.

$$E(V) = (r - \delta) + D/V$$

Answer: The questions are as follows (a) or (b).

(a) Analyze different types of assets.

26. (a) Analyze the concept of expected return of a stock.

(b)

(c) Explain the working principle and features of different types of investment.

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27. (a) Analyze the concept of the difference of a stock and a bond.

(b)

(c) Analyze the expected return of a stock.

28. (a) Explain the concept of historical cost.

(b)

(c) Analyze the concept of stock.

29. (a) Explain different types of assets.

(b)

(c) Analyze the concept of different types of investment.

30. (a) Analyze the concept of different types of investment.

(b)

(c) Analyze the concept of different types of investment.

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