

B.Sc. Semester - 2 (CBCS) Examination
July-2025 (OLD COURSE)
PHYSICS (CORE)

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Que.1(A) Answer the following questions (any one). (07)
- (1) Explain velocity of transverse wave on a string.
 - (2) Deriving Newton's formula for velocity of sound in gas and explain Laplace's correction.
- Que.1(B) Answer the following questions (any one). (04)
- (1) Discuss principle of superposition.
 - (2) Explain musical scale.
- Que.1(C) Answer the following questions (any three). (03)
- (1) Write types of waves.
 - (2) Longitudinal waves are produced in Solids. Correct?
 - (3) What is speed of sound waves in air medium?
 - (4) Intensity of a wave is square of its amplitude. Correct?
 - (5) Velocity of sound in vacuum is _____ m/s.
- Que.2(A) Answer the following questions (any one). (07)
- (1) Derive an expression for efficiency of full wave rectifier.
 - (2) Explain common base connection in detail.
- Que.2(B) Answer the following questions (any one). (04)
- (1) Write a note on zener diode.
 - (2) Write a note on transistor.
- Que.2(C) Answer the following questions (any three). (03)
- (1) Maximum efficiency of half wave rectifier is _____.
 - (2) The value of ripple factor for full wave rectifier is _____.
 - (3) Write types of filter.
 - (4) Write three configuration of transistor.
 - (5) Write two names of transistor characteristics.
- Que.3(A) Answer the following questions (any one). (07)
- (1) Explain Young's double slit experiment.
 - (2) Explain Newton's ring.
- Que.3(B) Answer the following questions (any one). (04)
- (1) Explain superposition of waves.
 - (2) Write a note Lloyd's single mirror.
- Que.3(C) Answer the following questions (any one). (03)
- (1) What is wave front?
 - (2) Write Huygens principle.
 - (3) Write types of interference.
 - (4) Write the range of wavelength of light in meter.
 - (5) Write unit of refractive index.
- Que.4(A) Answer the following questions (any one). (07)
- (1) Explain Fraunhofer diffraction due to a single slit.
 - (2) Explain action of zone plate.

- Que.4(B) Answer the following questions (any one). (04)
- (1) Discuss plane diffraction grating.
 - (2) Derive the radius and area of first and second half period zone.
- Que.4(C) Answer the following questions (any three). (03)
- (1) What is diffraction?
 - (2) Write types of diffraction.
 - (3) Write condition for maximum intensity in single slit diffraction.
 - (4) A diffraction grating has 1000 lines per mm. What is the grating element?
 - (5) What is the primary function of a zone plate?
- Que.5(A) Answer the following questions (any one). (07)
- (1) Write a note on Nicol prism.
 - (2) Derive law of refraction from Fermat's principle.
- Que.5(B) Answer the following questions (any one). (04)
- (1) Explain in brief polarizer and analyzer.
 - (2) Write a note on dispersive power.
- Que.5(C) Answer the following questions (any three). (03)
- (1) What is polarized light?
 - (2) Write types of production of polarized light.
 - (3) Write Fermat's principle of least time.
 - (4) What are the cardinal points of an optical system?
 - (5) What is angular dispersion?
