647510 **BSC2PhyC201x** **Seat No :_____**

B.Sc. Semester - 2 (*CBCS*) Examination
March/April – 2026 (New Course)
PHYSICS (CORE)

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

Instructions:

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

Que.1(A) Answer the following questions (any two out of three) (10)

(1) Explain the Newton's formula for speed of sound in gas.

(2) Explain the principle of superposition.

(3) Explain speed of sound in a material medium.

Que.1(B) Answer the following questions (any one out of two) (04)

(1) Write a short note on beats.

(2) Give the classification of waves.

Que.2(A) Answer the following questions (any two out of three) (10)

(1) Write a detailed note on zener diode.

(2) Discuss the circuit details and working of centre-tapped full wave rectifier with necessary circuit diagrams.

(3) What is half wave rectifier? Prove that the maximum efficiency of a half wave rectifier is 40.6%.

Que.2(B) Answer the following questions (any one out of two) (04)

(1) Why common emitter (CE) configuration is most preferred in circuit?

(2) Draw the structure and symbol of PNP and NPN transistor.

Que.3(A) Answer the following questions (any two out of three) (10)

(1) Describe the conditions for interference of light.

(2) Discuss Young's double slit experiment.

(3) Explain Huygens Principle of wavefront.

Que.3(B) Answer the following questions (any one out of two) (04)

(1) Describe techniques for obtaining coherent sources of light.

(2) Derive the formula for the radius of the Newton's rings.

Que.4(A) Answer the following questions (any two out of three) (10)

(1) Write a short note on zone plate.

(2) Discuss with necessary diagram: Fresenel diffraction and Fraunhoffer diffraction.

(3) List out the differences between a zone plate and a convex lens.

Que.4(B) Answer the following questions (any one out of two) (04)

(1) Write a short note on plane diffraction grating.

(2) What are the similarities between a zone plate and a convex lens?

Que.5(A) Answer the following questions (any two out of three) (10)

(1) Discuss Faraday's law of electromagnetic induction.

(2) Discuss energy stored in magnetic field.

(3) State and derive Gauss's theorem.

Que.5(B) Answer the following questions (any one out of two) (04)

(1) Write a note on self-inductance.

(2) Discuss electric field around an infinite line of charge.

****