Department of Physics, UCST

Max. Duration: 1hr **2nd Internal Test Paper** **Max. Marks: 25**

I. Answer all the following $\mathbf{5 \times 4 = 20}$

1. a. Obtain the general wave equation for one dimensional wave.

Or

b. Obtain Newton's formula for velocity of sound.

2. a. Explain the theory of Helmholtz resonator.

Or

b. Derive the expression for energy transport by a transverse wave.

3. a. Explain the theory of an air wedge.

Or

b. What is biprism? Derive an expression for wavelength using biprism

4. a. Derive an expression for the focal length of zone plate.

Or

b. Derive an expression for maximum and minimum intensity for single slit Fraunhoffer diffraction

II. Answer any five of the following $\mathbf{1 \times 5 = 5}$

1. What is ripple?
2. State superposition principle.
3. Define normal modes.
4. What is the intensity in watts per meter squared of 85 dB sound?
5. What is wave particle duality?
6. What are coherent sources?
7. What is a diffraction grating?
8. Define half period zone.