Quality Checkers Only way to fulfill your dreams	XI-SCI : Physics Sound,	**DATE:** **TIME: 1 hour 30 minutes** **MARKS: 25** SEAT NO:

Note:-

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and Write the correct answer. **(4)**

1. Decible is unit of

   A) wavelength B) amplitude
   C) velocity D) loudness

2. When sound waves travel from air to water, which of these remains constant?

   A) Velocity B) Frequency
   C) Wavelength D) All of above

3. If frequency of sound is 340 Hz and velocity is 340 m/s, then wavelength is

   A) 1.2 m B) 1.6 m
   C) 0.8 m D) 1 m

4. If velocity of sound wave is 330 m/s and wavelength of wave is 0.5 m, then frequency is

   A) 660 Hz B) 330 Hz
   C) 160 Hz D) 1320 Hz

Q.2 Answer the following. **(3)**

1. Define Electromagnetic Wave :
2. Define Progressive Wave :
3. Define Damped Oscillation :

Section B
Attempt any Four

Q.3 Define progressive wave. State any four properties. **(2)**

Q.4 The speed of sound does not depend upon its frequency. Verify this statement from any experience in daily life. **(2)**

Q.5 State any two applications of acoustics. **(2)**

Q.6 Define the relation between velocity, wave length and frequency of wave. **(2)**

Q.7 At what temperature will the speed of sound in air be 1.75 times its speed at N.T.P? **(2)**

Q.8 The densities of Nitrogen and Oxygen at N.T.P. are 1.25 kg/m3 and 1.43 kg/m^3 respectively. If the speed of sound in Oxygen at N.T.P. is 320 m/s, calculate the speed in Nitrogen under the same condition of temperature and pressure (γ for both gases is 1.4). **(2)**

Section C
Attempt any Two

Q.9 Given below are some examples of wave motion. State in each case, if the wave motion is transverse, longitudinal or a combination of both: **(3)**

1. Motion of a kink in a long coil spring produced by displacing one end of the spring side ways.
2. Waves produced in a cylinder containing a liquid by moving its piston back and forth.
3. Waves produced by a motor boat sailing in water.
4. Light waves travelling from the sun to the earth.
5. Ultrasonic waves in air produced by a vibrating quartz crystal.
6. Radio waves broadcasted from a radio station.

Q.10 Distinguish between traverse waves and longitudinal waves. **(3)**

Q.11 State Newton's formula for velocity of sound. **(3)**

Section D
Attempt any One

Q.12 What type of hearing aids are required by persons on the surface of moon and why? **(4)**

Find the temperature at which the velocity of sound in air will be 1.5 times its velocity at 0 °C

Q.13 Two trains are moving with constant speed of 90 km/hr and 72 km/hr. The frequency of the whistle of first train is 800 Hz. Calculate the apparent frequency of this whistle as heard by the observer sitting in the second train in following cases : **(4)**

(a) the two trains approach each other
(b) the two trains move away from each other
(c) the first train follows the second train
(d) the second train follows the first train
Given velocity of sound in air = 332 m/s