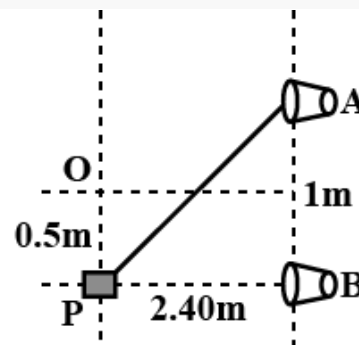# EXERCISES INTERFERENCE & STANDING WAVE

1/ Two speakers A and B are placed 1 m apart, each produces sound waves of frequency 1800 Hz in phase. A detector moving parallel to the line joining the speakers at a distance of 2.4 m away detects a maximum intensity at O and then at P. Find the speed of the sound wave.

2/ Two identical loudspeakers are placed on a wall 2.00 m apart. A listener stands 3.00 m from the wall directly in front of one of the speakers. A single oscillator is driving the speakers at a frequency of 300 Hz.

   (a) What is the phase difference in radians between the waves from the speakers when they reach the observer?

   (b) What is the frequency closest to 300 Hz to which the oscillator may be adjusted such that the observer hears minimal sound?

3/ Two identical loudspeakers are driven in phase by a common oscillator at 800 Hz and face each other at a distance of 1.25 m. Locate the points along the line joining the two speakers where relative minima of sound pressure amplitude would be expected.

    4/ A wire of length 4.35 m and mass 137 g is under a tension of 125 N. A standing wave has formed which has seven nodes including the endpoints.

    a/ What is the frequency of this wave? Which harmonic is it?

    b/ What is the fundamental frequency?

    c/ The maximum amplitude at the antinodes is 0.0075 m, write an equation for this standing wave.