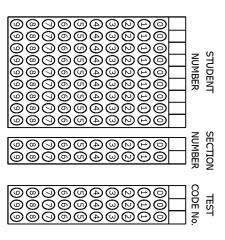
NAME _ STUDENT No. _ SECTION No. _



Q1. The pressure in a travelling sound wave is given by the equation

 $\Delta p = (3.02 \times 10^{-3} \, Pa) \sin \pi \, [(0.955 \, m^{-1}) \, x \, - \, (296 \, s^{-1})t].$

Find the sound level of the wave in dB (Take the density of air $\rho_{air} = 1.21 \, kg/m^3$).

A) 36.4
B) 94.1
C) 90.7
D) 66.0
E) 40.8
$$B = 10 \log \frac{1}{I_0} = 10 \log \frac{1}{2} \rho V \omega^2 S_m^2$$

$$= 10 \log \frac{1}{2} \rho V \omega^2 (\frac{\Delta \rho_m}{\rho V \omega})^2$$

$$= 10 \log \frac{(3.02 \times 10^3)^2}{2 \rho V I_0} = 10 \log \frac{(3.02 \times 10^3)^2}{2(1.21)(\frac{296}{0.955})^{10/2}}$$

$$= 40.8 \text{ JB}$$

Q2. An ambulance emits sound waves with frequency f. A stationary observer detects a frequency of 1.06 f as the ambulance approaches him. What is the speed of the ambulance in the unit m/s? Take the speed of sound as 343 m/s.

23 A B C D E	48 (A) (B) (C) (D) (E)	73 A B C D E	98 A B C D E	123 A B C D E
24 A B C D E	49 A B C D E	74 A B C D E	99 A B © D E	124 A B © D E
25 A B O D E	50 A B C D E	75 A B C D E	100 A B C D E	125 A B C D E