

PHY 2811 (2009)

Solution of Exp.2 prelab questions

1. What is the wavelength of a 50 kHz ultrasonic wave at 20 °C ?

$$\text{Ans: } v = v_0 \sqrt{\frac{T}{273}} = 331.3 \sqrt{\frac{273 + 20}{273}} = 343 \text{ m/sec}$$

$$\lambda = \frac{v}{f} = \frac{343}{50 \times 10^3} = 6.86 \times 10^{-3} \text{ m}$$

2. How long does it take a sound wave to be reflected from a distance of 1 meter?

$$\text{Ans: } t = \frac{2d}{v} = \frac{2}{343} = 5.82 \times 10^{-3} \text{ sec}$$