Question 1

(1 points)

In a resonating tube that is open at one end and closed at the other end, there

0.0% are displacement nodes at each end.

0.0% are displacement antinodes at each end.

22.1% is a displacement node at the open end and a displacement antinode at the closed end.

76.9% is a displacement node at the closed end and a displacement antinode at the open end. Your Answer

Question 2

(1 points)

A pipe of length L is open at both ends. What are the wavelengths of the three lowest-pitch tones that this pipe produces?

0.0% 4L, 2L, L

3.8% 2L, L, L/2

93.3% 2L, L, 2L/3 Your Answer

1.9% 4L, 4L/3, 4L/5

Question 3

(1 points)

Find the length of an organ pipe closed at one end that produces a fundamental frequency of 238 Hz. Assume a speed of sound of 343 m/s.

0.0% 0.25 m

0.0% 0.32 m

98.1% 0.36 m Your Answer

1.0% 0.39 m

0% 0.55 m

Question 4

(1 points)

On a particular day the ocean swell has a period of 10 s, a wave velocity of 5.0 m/s, and a wave amplitude of 1.31 m. An anchored boat is bobbing up and down as the wave passes by. What is the peak vertical velocity of the boat?

Please enter a numerical answer below. Accepted formats are numbers or "e" based scientific notation e.g. 0.23, -2, 1e6, 5.23e-8

0.823 m/s ✓ Your Answer

Question 5

(1 points)

A wave is modeled by the wave function $y = 0.30\ m \cdot sin\left[\frac{2\pi}{4.50\ m}(x - 18.00\frac{m}{s}t)\right]$. What is the period of the wave?

0.0% 0.15 s

99.0% 0.25 s ✓ Your Answer

0% 0.33 s

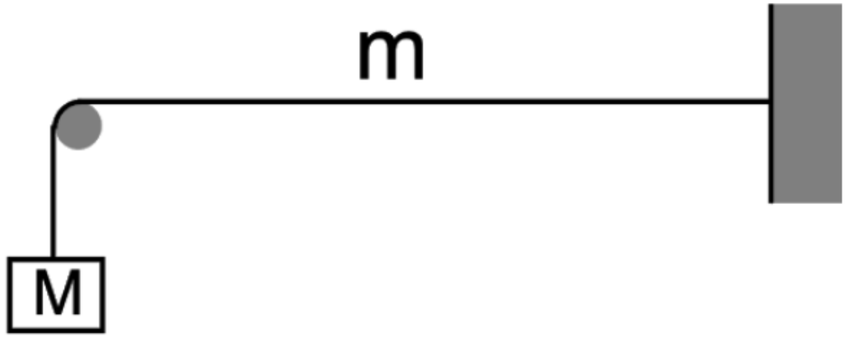
0% 0.5 s

Question 6

(1 points)

A string of total length L and mass m is put under tension by a mass M as shown. What is the velocity of a transverse wave on this string?

Image size: s M L Max



0.0% 343 m/s

1.9% $\sqrt{\frac{F_T}{M/L}}$

1.9% $\sqrt{\frac{m \cdot g}{M/L}}$

95.2% $\sqrt{\frac{M \cdot g}{m/L}}$ Your Answer

Question 7

(1 points)

A string of length 1.78 m and linear mass density 0.00125 kg/m is forced to oscillate at a fixed frequency of 346 Hz. How much tension is required to excite an n=2 standing wave on the string?

Please enter a numerical answer below. Accepted formats are numbers or "e" based scientific notation e.g. 0.23, -2, 1e6, 5.23e-8

474 N Your Answer

Your actual answer was 474.14 which differs from the answer above by a small rounding error or significant figures. Check with your instructor how this will be graded in a testing situation.

Question 8

(1 points)

A tube of length L is closed at one end and open at the other end. It is resonating at its fundamental frequency. Which statement is correct?

24.0% The wavelength is 4L and there is a displacement node at the pipe's open end.

74.0% The wavelength is 4L and there is a displacement antinode at the pipe's open end. ✓ Your Answer

0.0% The wavelength is 2L and there is a displacement node at the pipe's open end.

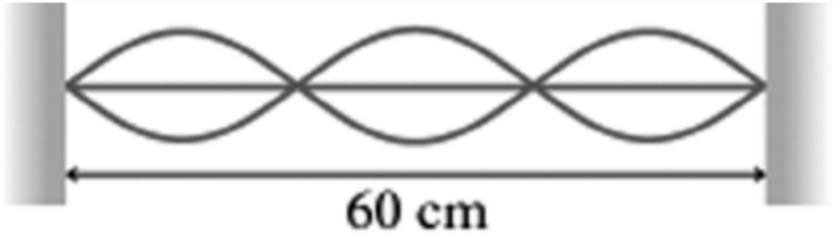
1.0% The wavelength is 2L and there is a displacement node at the pipe's closed end.

Question 9

(1 points)

A standing wave on a string is oscillating at 950 Hz, as shown in the figure. What is the wave speed?

Image size: s M L Max



96.2% 380 m/s ✓ Your Answer

0.0% 570 m/s

0.0% 290 m/s

1.9% 190 m/s

Question 10

(1 points)

A string fixed at both ends has one harmonic at frequency 52.2 Hz and the next higher harmonic at 60.9 Hz. What is the fundamental frequency of the string?

0.0% 26.1 Hz

98.1% 8.7 Hz ✓ Your Answer

1.0% 4.35 Hz

0% 30.4 Hz

0% 17.4 Hz

Question 11

(1 points)

You drive along highway 1 at 25.0 m/s when you hear the siren of an ambulance traveling at constant speed in the opposite direction. When the ambulance is approaching, you hear a frequency of 2380 Hz. When it is past you the frequency becomes 1680 Hz. What is the frequency of the siren? Assume a speed of sound in air of 343 m/s.

2.9% 1.8 kHz

86.5% 2.0 KHz ✓ Your Answer

4.8% 2.1 kHz

2.9% 2.3 kHz

Question 12

(1 points)

What is the intensity of a laser beam, when 90% absorbed, puts 74.6 J of energy into a circular spot 1.46 mm in diameter in 3.76 s?

Please enter a numerical answer below. Accepted formats are numbers or "e" based scientific notation e.g. 0.23, -2, 1e6, 5.23e-8

13200000 W/m^2 ✓ Your Answer

Your actual answer was 13167795 which differs from the answer above by a small rounding error or significant figures. Check with your instructor how this will be graded in a testing situation.

Question 13

(1 points)

What is the sound intensity level of a sound with intensity 10^{-3} W/m^2?

3.8% 30 dB

1.0% 60 dB

94.2% 90 dB ✓ Your Answer

0% 96 dB

Question 14

(1 points)

You hear two different sounds. You perceive sound B 9.57 times louder than sound A. If the intensity level produced by sound A is 38.5 dB. What is the sound intensity level of sound B?

Please enter a numerical answer below. Accepted formats are numbers or "e" based scientific notation e.g. 0.23, -2, 1e6, 5.23e-8

71.1 dB ✓ Your Answer

Your actual answer was 71.09 which differs from the answer above by a small rounding error or significant figures. Check with your instructor how this will be graded in a testing situation.