Physics 200 (Stapleton) **Name: _____**
Final Exam Review

Test 5.5: Waves and Sound

1. ____ frequency
2. ~~____ angular frequency~~
3. ____ T
4. ____ wavelength x frequency
5. ____ λ
6. ____ amplitude

A. seconds
B. Hertz
~~C. radians per second~~
D. meters
E. meters per second

10. As the temperature of air increases, the speed of sound in that air…
A. increases B. decreases C. stays the same

11. A beat frequency of 6Hz is heard when a 600Hz tuning fork and a ____ tuning fork are struck at the same time.
A. 6Hz B. 100 Hz C. 594 Hz D. 660 Hz E. 3600 Hz

12. For a tube of length L that is open on both ends, the wavelength of the fundamental is?
A. 1/4L B. 1/2L C. L D. 2L E. 4L

13. The parts of a standing wave that have <u>no</u> movement are called
A. fundamentals B. harmonics C. nodes D. antinodes

14. Longitudinal waves have a disturbance that is
A. in the same direction as the motion of the wave.
B. perpendicular to the direction of motion of the wave.
C. counterclockwise to the direction of the wave.
D. clockwise to the direction of the wave.

16. A sine wave is an example of a transverse wave.
A. True B. False C. Unable to determine

18. A sound source moving toward you (compared to the same sound source at rest) will seem to have
A. a lower pitch B. a lower speed of sound C. a lower frequency
D. a shorter wavelength E. the same frequency

19. A tone is produced by a computer. As the frequency of the tone is decreased,
A. the speed of the sound increases. B. the speed of the sound decreases.
C. the sound wave's period increases. D. the sound wave's period decreases.
E. the sound's wavelength decreases.

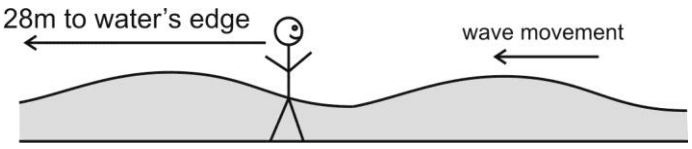
20. A vibrating string has a standing wave pattern with exactly 3 nodes and 2 antinodes. If the length of the string is L, what is the wavelength of the standing wave pattern?
a. 1/2L b. L C. 2/3 D. 3/2L E. 2L

<u>Waves and Sound Problems</u>

1. A bat finds a moth by sending a sound pulse through the air and listening for the echo. If the distance between the moth and the bat is 15m, how long after it makes a sound does the bat hear its echo? (Assume that the speed of sound is 340m/s)

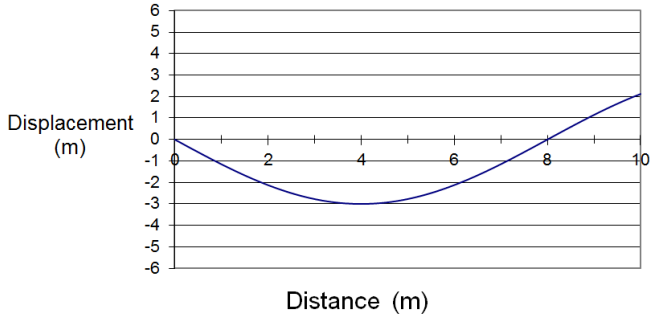
3. Calculate the speed of sound on a day when sound with a frequency of 440Hz frequency has a wavelength of 0.79 m.

4. You're standing motionless in the waves at the beach. You are 28m from the water's edge. A wave crest hits you every 5 seconds. After the waves pass you, it takes them 7 seconds to travel to the water's edge. Find…



a. The frequency of the waves.
b. The speed of the waves.
c. The wavelength of the waves

7. Given that the velocity of the wave shown on the right is 90.0 m/s, find each of the following.
   A. λ = _____
   B. f = _____
   C. T = _____
   D. A = _____



Test 5: Waves and Sound

1. B frequency
2. C angular frequency
3. A T
4. E wavelength x frequency
5. D λ
6. D amplitude

A. seconds
B. Hertz
C. radians per second
D. meters
E. meters per second

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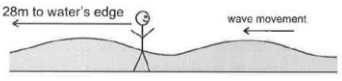
Waves and Sound Problems

1. A bat finds a moth by sending a sound pulse through the air and listening for the echo. If the distance between the moth and the bat is 15m, how long after it makes a sound does the bat hear its echo? (Assume that the speed of sound is 340m/s) 0,088 s

3. Calculate the speed of sound on a day when sound with a frequency of 440Hz frequency has a wavelength of 0.79 m. 347.6m/s

4. You're standing motionless in the waves at the beach. You are 28m from the water's edge. A wave crest hits you every 5 seconds. After the waves pass you, it takes them 7 seconds to travel to the water's edge. Find…



   a. The frequency of the waves. 0,2 Hz
   b. The speed of the waves. 4m/s
   c. The wavelength of the waves 20m

7. Given that the velocity of the wave shown on the right is 90.0 m/s, find each of the following.
   A. λ = 16m
   B. f = 5,63 Hz
   C. T = 0,178 s
   D. A = 3m