Name: _____ Class: _____ Date: _____ ID: A

Ch14 Sound Test

14.1 Conceptual Questions

____ 1) What characteristics of a sound wave are related to the "pitch" of a musical note? (There could be more than one correct choice.)
A) amplitude
B) wavelength
C) frequency
D) period

____ 2) Sound A has a high pitch and sound B has a low pitch. Which of the following statements about these two sounds are correct? (There could be more than one correct choice.)
A) The wavelength of A is longer than the wavelength of B.
B) The period of A is shorter than the period of B.
C) The frequency of A is greater than the frequency of B.
D) Sound B travels faster than sound B through air.
E) The amplitude of A is larger than the amplitude of B.

____ 3) You double your distance from a sound source that is radiating equally in all directions. What happens to the intensity of the sound? It reduces to
A) one-half its original value.
B) one-fourth its original value.
C) one-sixteenth its original value.
D) none of the above

____ 4) Suppose that a sound source is emitting waves uniformly in all directions. If you move to a point twice as far away from the source, the frequency of the sound will be
A) unchanged.
B) half as great.
C) one-fourth as great.
D) twice as great.

____ 5) Two tuning forks have frequencies of 440 and 522 Hz. What is the beat frequency if both are sounding simultaneously?
A) 962 Hz
B) 481 Hz
C) 82 Hz
D) 55 Hz
E) 41 Hz

____ 6) Two pure tones are sounded together and a particular beat frequency is heard. What happens to the beat frequency if the frequency of one of the tones is increased?
A) It increases.
B) It decreases.
C) It does not change.
D) It could either increase or decrease.

____ 7) A music tuner uses a 554-Hz C# tuning fork to tune the frequency of a musical instrument. If the tuner hears a beat frequency of 2 Hz, what is the frequency of the instrument?
A) It must be 556 Hz.
B) It must be 552 Hz.
C) It could be either 556 Hz or 552 Hz.
D) It could be either 553 Hz or 555 Hz.
E) It is neither 556 Hz or 552 Hz.

____ 8) As you are moving very quickly toward a speaker emitting a pure tone, which characteristics of the sound get larger? (There may be more than one correct choice.)
A) frequency
B) amplitude
C) wavelength
D) period
E) loudness

____ 9) In many cartoon shows, a character runs off a cliff, realizes his predicament, and lets out a scream. He continues to scream as he falls. If the physical situation is portrayed correctly, from the vantage point of an observer at the *top* of the cliff leaning over the edge, the pitch of the scream as he falls should be
A) higher than the original pitch and constant.
B) higher than the original pitch and increasing as he falls.
C) lower than the original pitch and constant.
D) lower than the original pitch and decreasing as he falls.
E) It is impossible to predict.

14.2 Problems

10) An elephant can hear sound with a frequency of 15 Hz. What is the wavelength of this wave if the speed of sound in air is 343 m/s?

____ 11) You drop a stone down a well that is 9.5 m deep. How long is it before you hear the splash? The speed of sound in air is 343 m/s and air resistance is negligible.
A) 1.2 s
B) 1.3 s
C) 1.4 s
D) 1.5 s
E) 1.6 s

____ 12) The speed of sound through the ground is about 6.0 km/s while the speed of sound in air is 343 m/s. A very powerful explosion occurs some distance away and you feel the ground vibrate 60 seconds before you hear the sound of the explosion. How far away is the explosion?

A) 20 km
B) 22 km
C) 25 km
D) 27 km
E) 30 km