

## Practice Chapter 20 Sound

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

- 1) A sound wave is a 1) \_\_\_\_\_  
A) longitudinal wave.  
B) transverse wave.  
C) all of the above  
D) none of the above
- 2) The approximate range of human hearing is 2) \_\_\_\_\_  
A) 10 hertz to 10,000 hertz.  
B) 20 hertz to 20,000 hertz.  
C) 40 hertz to 40,000 hertz.  
D) none of the above
- 3) A wave of frequency of 1000 hertz vibrates at 3) \_\_\_\_\_  
A) less than 1000 cycles per second.  
B) 1000 cycles per second.  
C) more than 1000 cycles per second.  
D) none of the above
- 4) Sound travels fastest in 4) \_\_\_\_\_  
A) air.  
B) water.  
C) steel.  
D) a vacuum.
- 5) Sound waves cannot travel in 5) \_\_\_\_\_  
A) air.  
B) water.  
C) steel.  
D) a vacuum.
- 6) In choosing between sound waves and radio waves, which has the greater speed? 6) \_\_\_\_\_  
A) sound wave  
B) radio wave  
C) both the same  
D) need more information
- 7) Compressions and rarefactions are characteristics of 7) \_\_\_\_\_  
A) longitudinal waves.  
B) transverse waves.  
C) both of these  
D) need more information
- 8) Which does NOT belong to the same family? 8) \_\_\_\_\_  
A) infrasonic waves  
B) ultrasonic waves  
C) radio waves  
D) shock waves  
E) longitudinal waves
- 9) A 340-hertz sound wave travels at 340 m/s in air with a wavelength of 9) \_\_\_\_\_  
A) 1 m.  
B) 10 m.  
C) 100 m.  
D) 1000 m.  
E) none of the above
- 10) Sound travels faster in air if the air temperature is 10) \_\_\_\_\_  
A) warm.  
B) cold.  
C) average.  
D) any of the above

- 11) One reason for the higher pitch of your voice after you've inhaled some helium is that sound travels \_\_\_\_\_  
A) slower in helium than in air.  
B) faster in helium than in air.  
C) the same speed in helium but with a longer wavelength.
- 12) An explosion occurs 34 km away. The time it takes for its sound to reach your ears, traveling at 340 m/s, is \_\_\_\_\_  
A) 0.1 s.  
B) 1 s.  
C) 10 s.  
D) 20 s.  
E) more than 20 s.
- 13) Reverberation of sound occurs for \_\_\_\_\_  
A) sound interference.  
B) forced vibrations.  
C) re-echoed sound.  
D) resonance.  
E) none of the above
- 14) When sound travels faster near the ground than above, bending of sound tends to be \_\_\_\_\_  
A) upward.  
B) downward.  
C) to the left.  
D) to the right.  
E) none of the above
- 15) Sound refraction can occur when the speed of sound \_\_\_\_\_  
A) remains constant.  
B) changes.  
C) ranges below supersonic.  
D) none of the above
- 16) The natural frequency of an object depends on its \_\_\_\_\_  
A) size.  
B) shape.  
C) elasticity.  
D) all of the above  
E) none of the above
- 17) The least energy required to produce forced vibration in an object occurs \_\_\_\_\_  
A) below its natural frequency.  
B) at its natural frequency.  
C) above its natural frequency.  
D) none of the above
- 18) Sound will be louder if a struck tuning fork is held \_\_\_\_\_  
A) in the air.  
B) with its base against a tabletop.  
C) with its prongs in shallow water.  
D) in your closed fist.

- 19) Reports are that singer Caruso was able to shatter a crystal chandelier with his voice, which illustrates \_\_\_\_\_  
A) an echo.  
B) sound refraction.  
C) beats.  
D) resonance.  
E) interference.
- 20) Resonance occurs with forced vibration that requires the \_\_\_\_\_  
A) least amount of energy input.  
B) maximum amount of energy input.  
C) matching of wave amplitudes.  
D) matching of constructive and destructive interference.  
E) minimum beat frequency.
- 21) A tuning fork of frequency 200 hertz can resonate if an incident sound wave has a frequency of \_\_\_\_\_  
A) 100 hertz. B) 200 hertz.  
C) both of these D) neither of these
- 22) Interference is a property of \_\_\_\_\_  
A) water waves.  
B) sound waves.  
C) light waves.  
D) all of the above  
E) none of the above
- 23) When sound waves superimpose they can interfere \_\_\_\_\_  
A) constructively. B) destructively.  
C) either of these D) neither of these
- 24) Sound waves can interfere with one another so that no sound results. \_\_\_\_\_  
A) True  
B) False  
C) Either, depending on the air temperature.
- 25) The phenomenon of beats is a result of sound \_\_\_\_\_  
A) refraction.  
B) reflection.  
C) interference.  
D) all of the above  
E) none of the above
- 26) The beat frequency produced when a 240-hertz tuning fork and a 246-hertz tuning fork are sounded together is \_\_\_\_\_  
A) 6 hertz.  
B) 12 hertz.  
C) 240 hertz.  
D) 245 hertz.  
E) none of the above

- 27) A piano tuner knows that a key on the piano is tuned to the frequency of a test tuning fork when the fork and key struck at same time produce beats of 27) \_\_\_\_\_
- A) 0 Hz.      B) 1 Hz.      C) 2 Hz.      D) 3 Hz.      E) 4 Hz.

## Answer Key

Testname: CHAPTER 20 PRACTICE SOUND

- 1) A
- 2) B
- 3) B
- 4) C
- 5) D
- 6) B
- 7) A
- 8) C
- 9) A
- 10) A
- 11) B
- 12) E
- 13) C
- 14) A
- 15) B
- 16) D
- 17) B
- 18) B
- 19) D
- 20) A
- 21) C
- 22) D
- 23) C
- 24) A
- 25) C
- 26) A
- 27) A