

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