Chapter 19 Waves Practice

Name_____

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

1) Which of these is affected by mass? 1) _____
A) a freely–falling object
B) an object sliding down a friction–free plane
C) a pendulum
D) all of the above
E) none of the above

2) The pendulum with the greatest frequency is one with the 2) _____
A) shortest length. B) longest length. C) neither of these

3) The stride of a horse would be quicker if more mass in its legs were concentrated 3) _____
A) in the upper part, nearer the horse's body.
B) towards its feet.
C) halfway up its legs.
D) uniformly all along its legs.
E) none of the above

4) Both a transverse wave and a longitudinal wave have 4) _____
A) amplitude.
B) frequency.
C) wavelength.
D) speed.
E) all of the above

5) The amplitude of a wave is 1 meter. The crest–to–trough distance of the wave is 5) _____
A) 0.5 m. B) 1 m.
C) 2 m. D) none of the above

6) A fishing–boat captain returns to port saying, "It's rough out there with waves that are 4 meters high." He is probably talking of waves of amplitude 6) _____
A) 1 m. B) 2 m. C) 3 m. D) 4 m.

7) The frequency of a simple pendulum does NOT depend on 7) _____
A) its mass.
B) its length.
C) the acceleration due to gravity.
D) all of the above
E) none of the above

8) The frequency of a certain wave is 10 hertz and its period is 8) _____
A) 0.1 second. B) 10 seconds.
C) 100 seconds. D) none of the above

9) A 60-vibration-per-second wave travels 30 meters in 1 second. Its frequency is 9) _____
A) 30 hertz and it travels at 60 m/s. B) 60 hertz and it travels at 30 m/s.
C) 1800 hertz and it travels at 2 m/s. D) none of the above

10) If you double the frequency of a vibrating object, its period 10) _____
A) doubles. B) halves. C) is quartered.

11) An object that completes 10 vibrations in 20 seconds has a frequency of 11) _____
A) 0.5 hertz. B) 2 hertz. C) 200 hertz.

12) An object that completes 100 vibrations in 5 seconds has a period of 12) _____
A) 0.5 second. B) 1 second.
C) 2 seconds. D) none of the above

13) The period of the second hand on a clock is 13) _____
A) 1 second.
B) 1/60 second.
C) 60 seconds.
D) 3600 seconds.
E) 12 hours.

14) The frequency of the second hand on a clock is 14) _____
A) 1 hertz. B) 1/60 hertz. C) 60 hertz.

15) Some of a wave's energy dissipates as heat. In time, this will reduce the wave's 15) _____
A) speed.
B) wavelength.
C) amplitude.
D) frequency.
E) period.

16) The compressions and rarefactions in a longitudinal wave travel in 16) _____
A) the same direction. B) opposite directions. C) a vacuum.

17) Which of these is a longitudinal wave? 17) _____
A) sound
B) light
C) radio
D) all of the above
E) none of the above

18) The vibrations of a transverse wave move 18) _____
A) along the direction of wave travel.
B) at right angles to the direction of wave travel.
C) that changes with speed.

19) The vibrations of a longitudinal wave move 19) _____

A) along the direction of wave travel.
B) at right angles to the direction of wave travel.
C) that changes with speed.

20) Which of these is a transverse wave? 20) _____

A) a Slinky shaken to and fro.
B) a radio wave
C) a sound wave
D) all of the above
E) none of the above

21) Which equation is correct for wave speed? 21) _____

A) wave speed = frequency x wavelength
B) wave speed = (1/period) x wavelength
C) both of these
D) neither of these

22) What is the wave speed of a wave traveling an average distance of 6 meters in one second? 22) _____

A) less than 0.2 m/s
B) 1 m/s
C) 3 m/s
D) 6 m/s
E) more than 6 m/s

23) A water wave passes by a floating leaf that is made to oscillate up and down two complete cycles each second, which means that the wave's frequency is 23) _____

A) 0.5 Hz. B) 1 Hz. C) 2 Hz. D) 3 Hz. E) 6 Hz.

24) A floating leaf oscillates up and down two complete cycles in one second as a 10–meter long water wave passes by. What is the wave's speed? 24) _____

A) 2 m/s
B) 10 m/s
C) 20 m/s
D) 40 m/s
E) more than 40 m/s

25) A wave travels an average distance of one meter in one second with a frequency of 1 hertz. Its amplitude is 25) _____

A) less than 1 meter.
B) 1 meter.
C) more than 1 meter.
D) need more information

26) The distance traveled by a wave during a single period is 26) _____

A) one–half wavelength.
B) one wavelength.
C) two wavelengths.
D) none of the above

27) A skipper on a boat sees wave crests passing the anchor chain every 5 seconds and estimates the distance between crests is 15 m. What is the speed of the water waves? 27) _____

A) 3 m/s
B) 5 m/s
C) 15 m/s
D) need more information

28) Interference is a property of 28) _____
A) sound waves.
B) water waves.
C) light waves.
D) all of the above
E) none of the above

29) A standing wave is likely produced when 29) _____
A) two waves overlap.
B) a wave reflects upon itself.
C) the speed of the wave is zero or near zero.
D) the amplitude of a wave exceeds its wavelength.

30) The number of nodes, including the end points, in a standing wave that is three wavelengths long is 30) _____
A) 4.
B) 5.
C) 6.
D) 7.
E) none of the above

31) The Doppler effect is characteristic of 31) _____
A) water waves.
B) sound waves.
C) light waves.
D) all of the above
E) none of the above

32) A Doppler effect occurs when a source of sound moves 32) _____
A) towards you. B) away from you.
C) either of these D) neither of these

33) A red shift for light indicates that the light source is moving 33) _____
A) toward you. B) away from you.
C) both of these D) neither of these

34) If you quickly run toward the orchestra at a concert, the frequency of the sound you hear will be 34) _____
A) decreased. B) increased. C) neither of these

35) A bow wave is produced when a speed boat moves 35) _____
A) nearly as fast as the waves it produces. B) as fast as the waves it produces.
C) faster than the waves it produces. D) none of the above

36) A shock wave is produced when a wave source moves 36) _____
A) nearly as fast as the waves it produces. B) as fast as the waves it produces.
C) faster than the waves it produces. D) none of the above

37) An aircraft that flies faster than the speed of sound is said to be 37) _____

A) subsonic. B) supersonic.

C) impossible. D) none of the above

38) A sonic boom is produced by an airplane flying at a speed 38) _____

A) just below the speed of sound.

B) equal to the speed of sound.

C) greater than the speed of sound.

D) all of the above

E) none of the above

39) The source of a sonic boom 39) _____

A) must be a sound emitter. B) may or may not be a sound emitter.

C) is not a sound emitter. D) none of the above

40) A jet traveling at 1500 km/h passes overhead. The sonic boom produced is heard by 40) _____

A) a listener on the ground. B) the jet pilot.

C) both of these D) neither of these

Answer Key
Testname: CHAPTER 19 PRACTICE

1) E
2) A
3) A
4) E
5) C
6) B
7) A
8) A
9) B
10) B
11) A
12) D
13) C
14) B
15) C
16) A
17) A
18) B
19) A
20) B
21) C
22) D
23) C
24) C
25) D
26) B
27) A
28) D
29) B
30) D
31) D
32) C
33) B
34) B
35) C
36) C
37) B
38) C
39) B
40) A