

Waves Quiz

Name: _____

Circle the best answer for each question. (2 points each)

1. Waves carry _____ from one place to another.

- A) Molecules
- B) Pressure
- C) Space
- D) Energy

2. A spring that is compressed and released produces a _____ wave.

- A) Transverse
- B) Light
- C) Longitudinal
- D) Bow

3. A rope moving up and down produces a _____ wave.

- A) Transverse
- B) Light
- C) Longitudinal
- D) Bow

4. A certain ocean wave has a frequency of 0.5 Hz and a wavelength of 10 m. What is the wave speed? $v = \lambda f$

- A) 50 m/s
- B) 5.0 m/s
- C) 0.5 m/s
- D) 0.05 m/s

5. Water waves travel as a _____ wave.

- A) Transverse
- B) Light
- C) Longitudinal
- D) Bow

6. The speed of sound at in a vacuum is

- A) 340 m/s
- B) 186,000 m/s
- C) 10 m/s
- D) 0 m/s

7. When waves run into each other, they exhibit...

- A) The Doppler Effect
- B) Reflection
- C) The Red Shift
- D) Interference

8. _____ is when there is an apparent change in the frequency of a wave due to the motion of the source or the receiver.

- A) Interference
- B) Reflection
- C) The Red Shift
- D) The Doppler Effect

9. If the source of waves moves toward the receiver, what happens to the apparent frequency of the waves?

- A) Increase
- B) Decrease
- C) Remain the same
- D) None of the above

10. _____ is forced vibration of an object at its natural frequency.

- A) Amplitude
- B) Size
- C) Resonance
- D) Vibration

11. The speed of sound is the changes depending on the material it is traveling through.

True B) False

12. Sound can travel in a outer space.

True B) False

13. Light can travel in a vacuum.

True B) False

14. Vibration is the source of most sounds.

True B) False

15. All supersonic airplanes produce a shock wave as they fly at Mach 2.

True B) False

16. High pitched sounds have a short wavelength.

A) True B) False

17. The frequency of a wave is indirectly proportional to the period

A) True B) False

18. Sound travels faster in steel than air.

A) True B) False

19. A sound that is 20 dB is ten times as intense as a 0dB sound.

A) True B) False

20. When two similar frequencies are played at the same time a beat frequency can be heard.

A) True B) False

21. The time needed to make one complete cycle is known as the _____ .

- A) wavelength
- B) period
- C) frequency
- D) amplitude
- E) velocity

22. Hertz is a measurement of _____.

- A) wavelength
- B) period
- C) frequency
- D) amplitude
- E) velocity

23. A wave created by shaking a rope up and down is known as a _____ wave.

- A) longitudinal wave
- B) transverse wave
- C) Bow wave
- D) Sound wave

24. A sound wave is a _____ wave.

- A) longitudinal
- B) transverse

- C) Bow
- D) slow

25. A doppler effect occurs when an object?

- A) moves toward you
- B) moves away from you
- C) both A and B
- D) does not move

26. The frequency of the second hand on a clock is?

- A) 1 Hz B) 60 Hz
- C) 1/60 Hz D) 1/60 second

27. What is the beat frequency of a 256 Hz and a 260 Hz tuning fork played together?

- A) 516 Hz B) 66560 Hz
- C) 5 Hz D) 4 Hz

28. What is the beat frequency of a 480 Hz and a 488 Hz tuning fork played together?

- A) 968 Hz B) 234,240 Hz
- C) 8 Hz D) 4 Hz

29. If two polarized filters are held with their polarization axes at right angles to each other, the amount of light transmitted is?

- A) unchanged B) zero
- C) half D) one third

30. What is the lowest frequency of light a human can see?

- A) red light B) green light
- C) white light D) Blue light

Calculations (3 points each)

Use the following equations

(wave speed = frequency x wavelength)

(distance = velocity x time)

to answer the following questions. Be sure to show your work for full credit.

21. What is the speed of a wave if its frequency is 5 Hz and its wavelength is 1m?

24. What is the beat frequency if a 440 Hz tuning fork is played with a 442 Hz tuning fork?

22. What is the frequency of wave if the wavelength is 5 m and the wave speed is 200 m/s?

25. How far is a canyon wall if you hear your echo returns in six seconds? (Given the Speed of sound in the canyon that day is 300 m/s)

23. What is the speed of water waves in a puddle if they are 0.2 m apart and generated by tapping the puddle four times each second?

26 . A resonance tube resonates at corrected length 34 cm with a 256 Hz tuning fork. What is the speed of sound in the room during the lab?