Critical Thinking Items

13.1 Types of Waves 14.

Give an example of a wave that propagates only through a solid.

a. Light wave
b. Sound wave
c. Seismic wave
d. Surface wave

15.

Can mechanical waves be periodic waves?

a. No, mechanical waves cannot be periodic waves.
b. Yes, mechanical waves can be periodic.

16.

In a sound wave, which parameter of the medium varies with every cycle?

a. The density of the medium varies with every cycle.
b. The mass of the medium varies with every cycle.
c. The resistivity of the medium varies with every cycle.
d. The volume of the medium varies with every cycle.

17.

What is a transverse wave in an earthquake called?

a. L-wave
b. P-wave
c. S-wave
d. R-wave

13.2 Wave Properties: Speed, Amplitude, Frequency, and Period 18.

If the horizontal distance, that is, the distance in the direction of propagation, between a crest and the adjacent trough of a sine wave is 1 m, what is the wavelength of the wave?

a. 0.5 m
b. 1 m
c. 2 m
d. 4 m

19.

How is the distance to the epicenter of an earthquake determined?

a. The wavelength difference between P-waves and S-waves is used to measure the distance to the epicenter.

b. The time difference between P-waves and S-waves is used to measure the distance to the epicenter.
c. The frequency difference between P-waves and S-waves is used to measure the distance to the epicenter.
d. The phase difference between P-waves and S-waves is used to measure the distance to the epicenter.

20.

Two identical waves superimpose in pure constructive interference. What is the height of the resultant wave if the amplitude of each of the waves is 1 m?

a. 1 m
b. 2 m
c. 3 m
d. 4 m

13.3 Wave Interaction: Superposition and Interference 21.

Two identical waves with an amplitude X superimpose in a way that pure constructive interference occurs. What is the amplitude of the resultant wave?

a. \frac{X}{2}
b. X
c. 2X
d. X^{2}

22.

In which kind of wave is the amplitude at each point constant?

a. Seismic waves
b. Pulse wave
c. Standing waves
d. Electromagnetic waves

23.

Which property of a medium causes refraction?

a. Conductivity
b. Opacity
c. Ductility
d. Density

24.

What is added together when two waves superimpose?

a. Amplitudes
b. Wavelengths
c. Velocities