Chapter 17 Waves-1

17-3 Transverse and Longitudinal Waves

Question 1

The velocity of a traveling wave on a string under fixed tension

(a) increases when the frequency increases
(b) does not change when the frequency increases
(c) decreases when the wave length increases
(d) decreases when the amplitude increases
(e) decreases when the frequency increases

17-4 Wavelength and frequency

Question 2 0.38-32%

A sinusoidal transverse wave travels along a string. The time for a particle on the string to move from maximum displacement to zero displacement is 0.170 seconds. What is the frequency of the source?

(a) 8.96 Hz
(b) 5.88 Hz
(c) 2.94 Hz
(d) 1.47 Hz
(e) 23.3 Hz

17-04

Question 3

A sinusoidal wave is described as:

y = (0.1 m) * sin[10*pi*(x/5 + t - 3/2)],

where x is in meters and t is in seconds. What are the values of its frequency(f), and its velocity(v)?

(a) f=5 Hz, v = 1 m/s moving in +x-direction.
(b) f=5 Hz, v = 5 m/s moving in +x-direction.
(c) f=5 Hz, v = 1 m/s moving in -x-direction.
(d) f=2 Hz, v = 5 m/s moving in -x-direction.
(e) f=5 Hz, v = 5 m/s moving in -x-direction.

17-04

Question 4 0.32-53%

A sinusoidal transverse wave is traveling on a string. Any point on the string:

(a) moves in the same direction as that of the wave.
(b) moves in a uniform circular motion with a different angular speed than that of the wave.
(c) moves in a simple harmonic motion with the same angular frequency as that of the wave.
(d) moves in a uniform circular motion with the same angular speed as the wave.
(e) moves in a simple harmonic motion with a different frequency than that of the wave.

17-04

Question 5 0.59-38%

Consider a wave described by the equation:

y(x,t) = A cos (k*x-w*t).

At t = 0, the displacement is zero at x= :

(a) 1/5 wavelength, 2/5 wavelength, . . .
(b) 1/2 wavelength, 3/2 wavelength, . . .
(c) 1/4 wavelength, 3/4 wavelength, . . .
(d) 1/3 wavelength, 5/3 wavelength, . . .
(e) 1/2 wavelength, 1 wavelength, ...

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