

Quiz 5

1. A wave travels at 175 m/s along the x-axis. If the period of the periodic vibrations of the wave is 3.0 milliseconds, then what is the wavelength of the wave?

- A) 25.5 cm
- B) 35.6 cm
- C) 42.9 cm
- D) 49.5 cm
- E) 52.5 cm

Ans: E

2. The wavelength of a periodic wave is 0.75 m. If the frequency is 425 Hz, then what is the velocity of the wave?

- A) 210 m/s
- B) 276 m/s
- C) 319 m/s
- D) 410 m/s
- E) 472 m/s

Ans:

3) An ambulance is generating a siren sound at a frequency of 2,000 Hz. The velocity of sound is 345 m/s. The observer and the ambulance are traveling toward each other at a velocity of 24.0 m/s. If the observer is stationary, what is the frequency of the siren perceived by the observer?

- a) 2,032 Hz
- b) 2,150 Hz
- c) 2,220 Hz
- d) 2,575 Hz
- e) 2,750 Hz

Ans: b

4) An ambulance is generating a siren sound at a frequency of 2,400 Hz. The velocity of sound is 345 m/s. If the observer is traveling at a velocity of 24.0 m/s toward the stationary ambulance, then what is the frequency of the siren perceived by the observer?

- a) 2,640 Hz
- b) 2,567 Hz
- c) 2,520 Hz
- d) 2,508 Hz
- e) 2,475 Hz

Ans: b

5) A sound wave radiates from a source in all directions. If the power of the sound source is 200 watts, then the intensity level of the sound wave 1000 m from the source is, in dB

- a) 62.8
- b) 66.0
- c) 68.5
- d) 70.5
- e) 72.0

Ans: e

6) The speed of sound in helium is 965 m/s. If the density of helium is 0.179 kg/m^3 , then what is the bulk modulus of helium,

- a) $2.70 \times 10^5 \text{ N/m}^2$
- b) $2.40 \times 10^5 \text{ N/m}^2$
- c) $2.20 \times 10^5 \text{ N/m}^2$
- d) $1.70 \times 10^5 \text{ N/m}^2$
- e) $1.56 \times 10^5 \text{ N/m}^2$

Ans: d

7) The speed of sound in air at 0°C is 331 m/s. What is the velocity of sound in air at a temperature of -30°C ?

- a) 308 m/s
- b) 310 m/s
- c) 312 m/s
- d) 314 m/s
- e) 316 m/s

Ans: c