Waves Chapter TEST Vince Carter Edition!!!!!!!!

Just jokes, its only a quiz

**Multiple Choice**

*Identify the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. If wavelength is kept constant, which increases as the speed of a wave increases?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | period | c. | amplitude |
| b. | frequency | d. | phase |

\_\_\_\_ 2. If the period of a certain wave (wavelength = 4.5 m) is 2 seconds, what is the speed of the wave?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 0.44 m/s | c. | 9.0 m/s |
| b. | 1.1 m/s | d. | 2.3 m/s |

\_\_\_\_ 3. A bell with a fundamental frequency of 880 Hz is moving toward an observer at 3.5 m/s. If the speed of sound is 343 m/s, what pitch would be heard by the observer?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 871 Hz | c. | 880 Hz |
| b. | 889 Hz | d. | 884 Hz |

\_\_\_\_ 4. A fire engine is moving south at 35 m/s while blowing its siren at a frequency of 400 Hz. What pitch will the passengers in a car that has already passed the fire engine hear if the car is traveling north at 18 m/s? Use 343 m/s for the speed of sound.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 473 Hz | c. | 380 Hz |
| b. | 338 Hz | d. | 421 Hz |

\_\_\_\_ 5. Which scenario would result in a drop in the pitch being observed?

|  |  |
| --- | --- |
| a. | The observer moves closer to a stationary source. |
| b. | The source moves toward a stationary observer. |
| c. | A source moving toward an observer suddenly stops. |
| d. | The observer and the source move in the same direction at the same speed. |

Written response:

1. A whistle (fo = 2.29 x 103Hz) is moving away from a stationary observer. The apparent frequency of the whistle is 2.18 x 103 Hz. If the temperature of the air is 20.0˚C, what is the speed of the whistle?
2. Two trains are speeding towards each other, both travelling at 38.0 m/s as shown in the diagram below.

a) If the train on the right blows its horn at an initial frequency of 2.00 x 103Hz, what is the frequency that the engineer of the other train hears? Assume that it is a nice 20.0°C outside.(3)

3. What is the frequency of laser light that has a wavelength of 0.067m?(3)

4. Out in the ocean, a wave crest 3.9m high meets a wave trough from another direction which is 2.1m deep. How high is the resulting wave?(2)

5. The distance between the first and fifth nodes in a standing wave is 70 cm.

a) What is the wavelength of the waves? (1 for diagram, 1 for answer)

b) What is the speed of the waves, if the source has a frequency of 120 Hz(3)

**Answer Section**

**MULTIPLE CHOICE**

1. ANS: B

wave speed = 

PTS: 1 DIF: Bloom's Level 4 REF: p. 384

NAT: B.6

2. ANS: D



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NAT: UCP.3

3. ANS: B

The sound becomes higher in pitch as its source moves toward an observer.

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NAT: UCP.3

4. ANS: B

The observers are moving away from the sound source at 35 m/s + 18 m/s.



PTS: 1 DIF: Bloom's Level 3 REF: pp. 407-408

NAT: UCP.3

5. ANS: C

When a source moving toward an observer suddenly stops, the Doppler shift on the sound suddenly goes away.

PTS: 1 DIF: Bloom's Level 3 REF: pp. 407-408

NAT: B.6

a frequency of 25 Hz?(3)