NUNAVUT PHYSICS 20 · UNIT D · 10 QUESTIONS

Oscillatory Motion & Mechanical Waves — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **An ambulance drives away from a stationary observer at 25 m/s. Its siren emits a frequency of 700 Hz, and the speed of sound in air is 343 m/s. The frequency heard by the observer is approximately**

- A 700 Hz
- B 652 Hz
- C 755 Hz
- D 613 Hz

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2 **A simple pendulum has a length of 0.65 m. Using g = 9.81 m/s², the frequency of the pendulum, to the nearest hundredth, is ____ Hz.**

ANSWER _____

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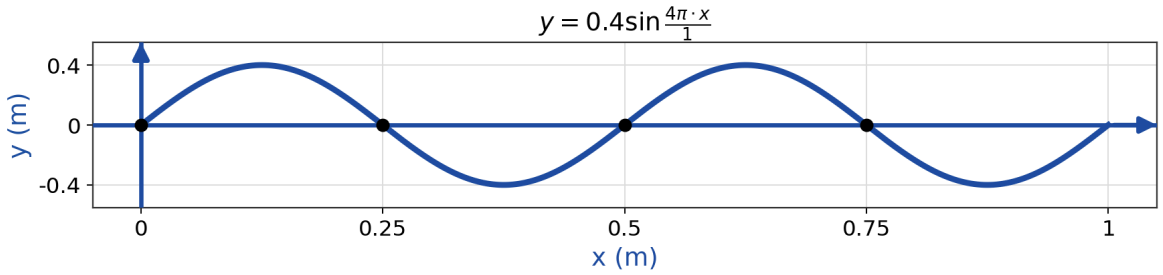
3 **The graph shows a standing wave pattern on a stretched string. The number of antinodes in the standing wave pattern is**



A 3

B 5

C 2

D 4

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4 **A tuning fork with a frequency of 440 Hz produces resonance at the fundamental frequency of an air column that is closed at one end. The speed of sound is 343 m/s. The length of the air column, to the nearest hundredth, is ____ m.**

ANSWER

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5 **A wave pulse travels along a rope whose far end is attached to a ring that can slide freely up and down a vertical pole. The reflected pulse is**

- **A** inverted, with the same amplitude as the incoming pulse
- **B** completely absorbed at the end of the rope
- **C** upright, with a larger amplitude than the incoming pulse
- **D** upright, with the same amplitude as the incoming pulse

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6 **A mass attached to a spring with a spring constant of 120 N/m oscillates with a period of 0.90 s on a frictionless surface. Using $T = 2\pi\sqrt{\frac{m}{k}}$, the mass, to the nearest tenth, is ____ kg.**

ANSWER _____

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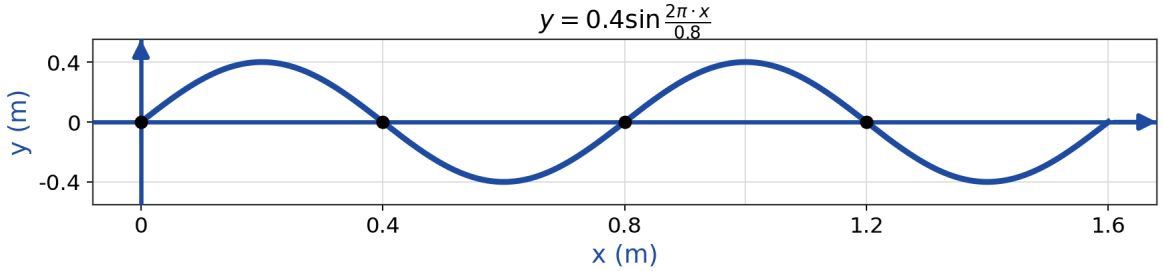
7 **The graph shows a standing wave pattern in an air column. The speed of sound in the air is 343 m/s. The frequency of the pattern shown is approximately**



A 429 Hz

B 143 Hz

C 286 Hz

D 572 Hz

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8 **A playground swing that is not pushed gradually comes to rest. The steady decrease in the amplitude of the swing is caused by**

A an increase in the period of the swing

B a decrease in the gravitational field strength

C damping, as mechanical energy is lost to friction and air resistance

D resonance between the swing and its surroundings

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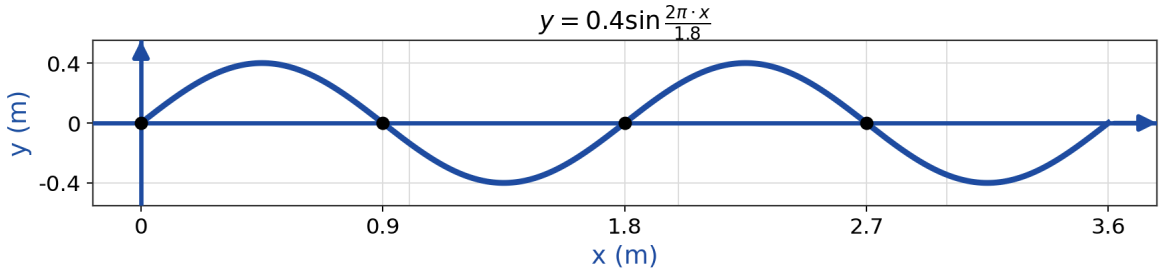
9 **The graph shows a wave on a stretched string. The fundamental frequency of the string is 180 Hz. The speed of waves in the string is**



A 162 m/s

B 324 m/s

C 90 m/s

D 648 m/s

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10 **A student blows across the top of a glass bottle and produces a musical note. When water is added to the bottle, shortening the air column inside, the pitch of the note**

A decreases

B stays the same

C increases

D becomes zero

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ANSWER KEY

1. B
2. 0.62
3. D
4. 0.19
5. D
6. 2.5
7. A
8. C
9. B
10. C

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