**Physics Unit 2 Yr 11: Topic Test : Waves 2017**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (38 marks)

1. The following shows the oscillation of a travelling wave on a string.. What is the amplitude and wavelength of the wave the string creates. (2 marks)

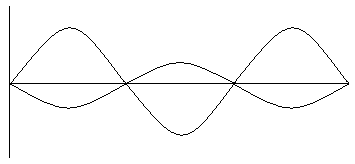
Amplitude \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Wavelength \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If the wave in the graph for question (1) is travelling at 4.00 ms-1, what is the period of the wave? (3 marks)
2. Complete the following: (3 marks)
3. In a region of stationary waves on a string, nodes indicate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vibration of particles.
4. The number of waves in a given time. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. The distance between two crests on a displacement / time graph is called the \_\_\_\_\_\_\_\_\_\_.
6. Waves can travel as longitudinal waves or transverse waves. Fully explain the difference giving one example of each. (4 marks) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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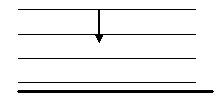
1. A student has set up two waves on a dual beam CRO. She then adds them together.

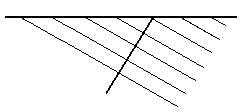
Draw the resultant wave. (2 marks)

1. Bending of waves due to passing around or through openings is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(1 mark)

1. Complete the following diagrams for reflection of waves at harbour wall and refraction of sound of bell above water. (3 marks)

 air



water

Harbour wall Bell

1. The Tacoma Bridge collapsed due to only wind gusts of 70kmh-1. What is the name of this phenomenon. Explain why the bridge collapsed using appropriate terminology. (3 marks)

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1. Andrew is blowing air over the end of a pipe. When he blows softly across the end, a microphone connected to a C.R.O. shows a frequency of 256 Hz. When he blows over the pipe much harder, a frequency of 1024 Hz is shown on the screen. The speed of sound on the day is 332 ms-1.
   1. Is the pipe open at both ends or open at one end and closed at the other? (1 marks)

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* 1. Fully explain the answer you gave. (3 marks) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. What is the length of the pipe assuming the 256 Hz is the fundamental frequency?

(2 marks)

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1. a) A pipe, open at both ends, is 40.0 cm long and is made to vibrate in its fundamental frequency. What is the period of the wave? (3 marks)

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b) The same pipe is then closed off at one end, what will be the frequency of the next harmonic after the first harmonic? ( 4 marks)

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1. The two speakers below are producing a 680 Hz note. Assume the speed of sound in air is 340 ms-1. Point P is 10.00 m from speaker A and 12.75 m from speaker B.

**P**

A 10.00 m

12.75 m

B

Determine if there is a node or anti-node at point P and what would be hear at this point. You must justify your answer to receive any marks. The wave position next to the speakers is an anti-node. Use a diagram to assist your answer. (You may need to complete this on the back of this page). (4 marks)