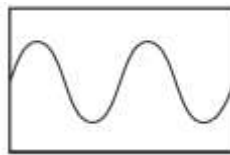


Wave Characteristics Homework

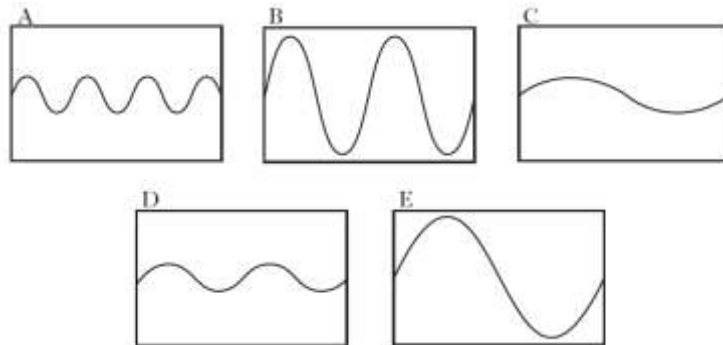
1. What is the frequency of a wave, if 20 crests pass a point in two seconds? (1)

A	0.1 hertz
B	2 hertz
C	10 hertz
D	20 hertz
E	40 hertz

2. When a student whistles a note into a microphone connected to an oscilloscope, the following pattern is displayed.

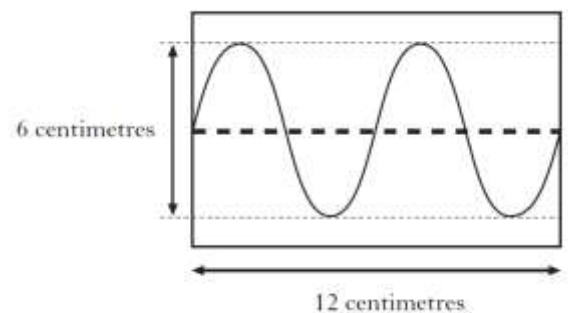


- Without changing the oscilloscope controls, another student whistles a quieter note of higher frequency into the microphone. Which of the following shows the pattern which would be displayed on the screen? (1)

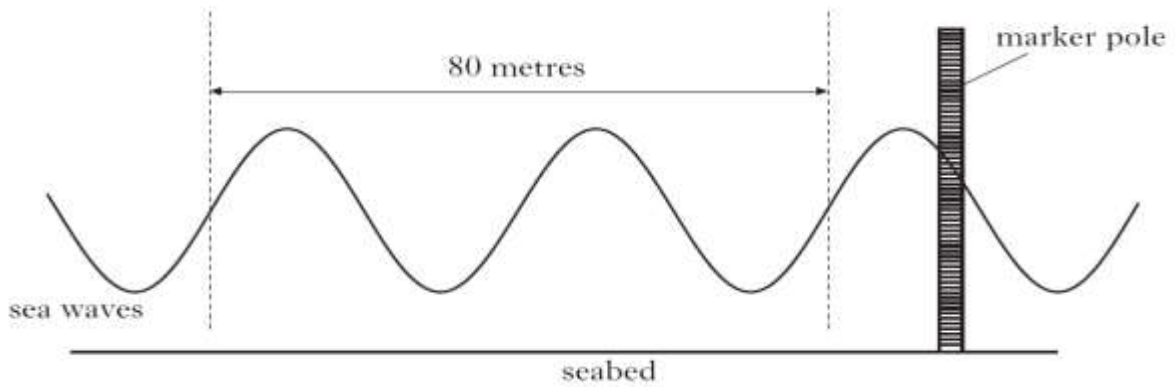


3. Electrical signals are displayed as waves on an oscilloscope.

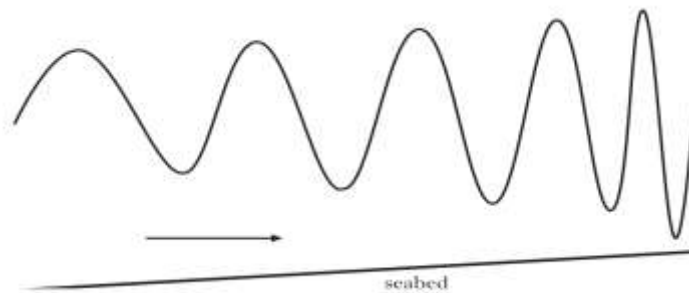
- a) Calculate the wavelength of the waves. (1)
- b) Calculate the amplitude of the waves. (1)



4. The diagram below shows a wave some distance from the beach.



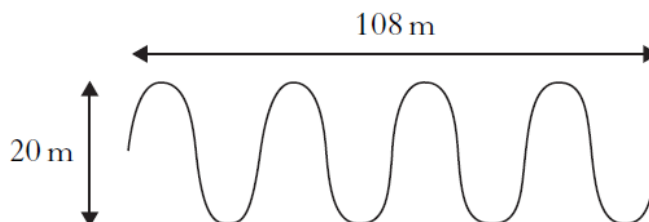
- (a) Using information from the diagram, calculate the wavelength of the wave. (1)
- (b) The time between one crest and the next crest passing the marker pole is 5 seconds. Calculate the speed of the wave. (3)
- (c) Calculate the frequency of the wave. (3)
- (d) The drawing below shows changes in the wave as it approaches the beach.



Copy and complete the sentences below by choosing the correct answers. (2)

- (i) As the wave approaches the beach,
 its wavelength $\left\{ \begin{array}{l} \text{decreases} \\ \text{increases} \\ \text{stays the same} \end{array} \right\}$.
- (ii) As the wave approaches the beach,
 its amplitude $\left\{ \begin{array}{l} \text{decreases} \\ \text{increases} \\ \text{stays the same} \end{array} \right\}$.

5. The diagram on the right gives some information about a wave.



The time taken for one crest on the wave to travel 108 m is 0.5 s. A student makes the following statements about the waves.

- I The wavelength of the wave is 27 m.
- II The amplitude of the wave is 20 m.
- III The speed of the wave is 216 ms^{-1} .

Which of the statements is/are correct?

A	I only
B	II only
C	I and III only
D	II and III only
E	I, II and III

(1)

1. A guitar tuner is used to measure the frequency of six guitar strings. The number and frequency of each string is given in the table below.

Number of string	Frequency (Hz)
1	330
2	247
3	196
4	147
5	110
6	82

The tuner has an output socket which has been connected to an oscilloscope. The trace for string 5 is shown in Figure 1.

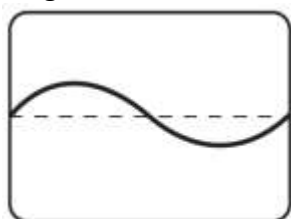


Figure 1

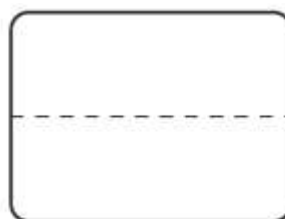


Figure 2

- a) The controls of the oscilloscope are **not** altered. Copy Figure 2 into your jotter, draw the trace obtained if string 5 is played **louder** than in figure 1. (2)
- b) String 1 is now plucked. Draw the trace that would be seen on the oscilloscope. (2)