

- 5 A horizontal string is stretched between two fixed points A and B. A vibrator is used to oscillate the string and produce an observable stationary wave.

At one instant, the moving string is straight, as shown in Fig. 5.1.



Fig. 5.1

The dots in the diagram represent the positions of the nodes on the string. Point P on the string is moving downwards.

The wave on the string has a speed of 35 ms^{-1} and a period of 0.040 s .

- (a) Explain how the stationary wave is formed on the string.

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..... [2]

- (b) On Fig. 5.1, sketch a line to show a possible position of the string a quarter of a cycle later than the position shown in the diagram. [1]

- (c) Determine the horizontal distance from A to B.

distance = m [3]

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- (d) A particle on the string has zero displacement at time $t = 0$. From time $t = 0$ to time $t = 0.060$ s, the particle moves through a total distance of 72 mm.

Calculate the amplitude of oscillation of the particle.

amplitude = mm [2]