

- 4 (a) State the conditions required for the formation of a stationary wave.

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.....[2]

- (b) A horizontal string is stretched between two fixed points X and Y. The string is made to vibrate vertically so that a stationary wave is formed. At one instant, each particle of the string is at its maximum displacement, as shown in Fig. 4.1.

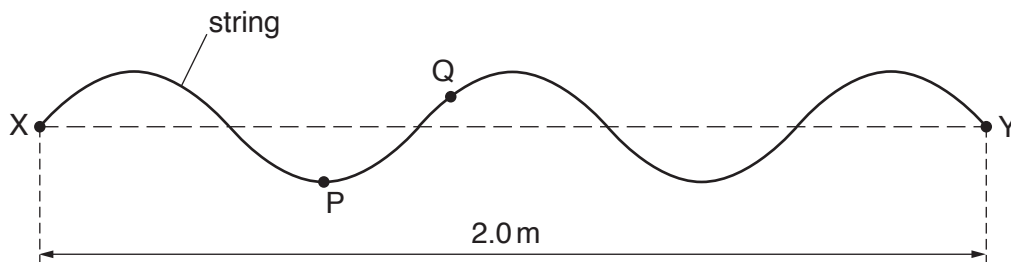


Fig. 4.1

P and Q are two particles of the string. The string vibrates with a frequency of 40 Hz. Distance XY is 2.0 m.

- (i) State the number of antinodes in the stationary wave.

number =[1]

- (ii) Determine the minimum time taken for the particle P to travel from its lowest point to its highest point.

time taken = s [2]

- (iii) State the phase difference, with its unit, between the vibrations of particle P and of particle Q.

phase difference =[1]

- (iv) Determine the speed of a progressive wave along the string.

speed =ms⁻¹ [2]

[Total: 8]