7. Waves

7.2 Transverse and longitudinal waves

Paper 2

Question Paper

1 **(a)** With reference to the direction of transfer of energy, compare the oscillations of transverse and longitudinal progressive waves.

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2 **(a)** A progressive wave travels through a medium. The wave causes a particle of the medium to vibrate along a line P. The energy of the wave propagates along a line Q.

Compare the directions of lines P and Q if the wave is:

(i) a transverse wave

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(ii) a longitudinal wave.

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3 **(a)** By reference to the direction of transfer of energy, state what is meant by a *longitudinal* wave.

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4 **(a)** **(i)** By reference to the direction of propagation of energy, state what is meant by a *longitudinal* wave.

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5 **(b)** A progressive wave travels from left to right along a stretched string. Fig. 4.1 shows part of the string at one instant.

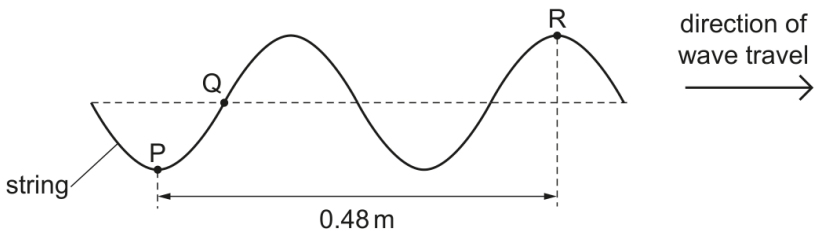


Fig. 4.1

P, Q and R are three different points on the string. The distance between P and R is 0.48 m. The wave has a period of 0.020 s.

(iv) Fig. 4.1 shows the position of the string at time $t = 0$. Describe how the displacement of point Q on the string varies with time from $t = 0$ to $t = 0.010$ s.

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