

- 5 (a) A progressive wave transfers energy. A stationary wave does not transfer energy. State two other differences between progressive waves and stationary waves.

1. ....

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2. ....

.....

[2]

- (b) A stationary wave is formed on a stretched string between two fixed points A and B. The variation of the displacement  $y$  of particles of the string with distance  $x$  along the string for the wave at time  $t = 0$  is shown on Fig. 5.1.

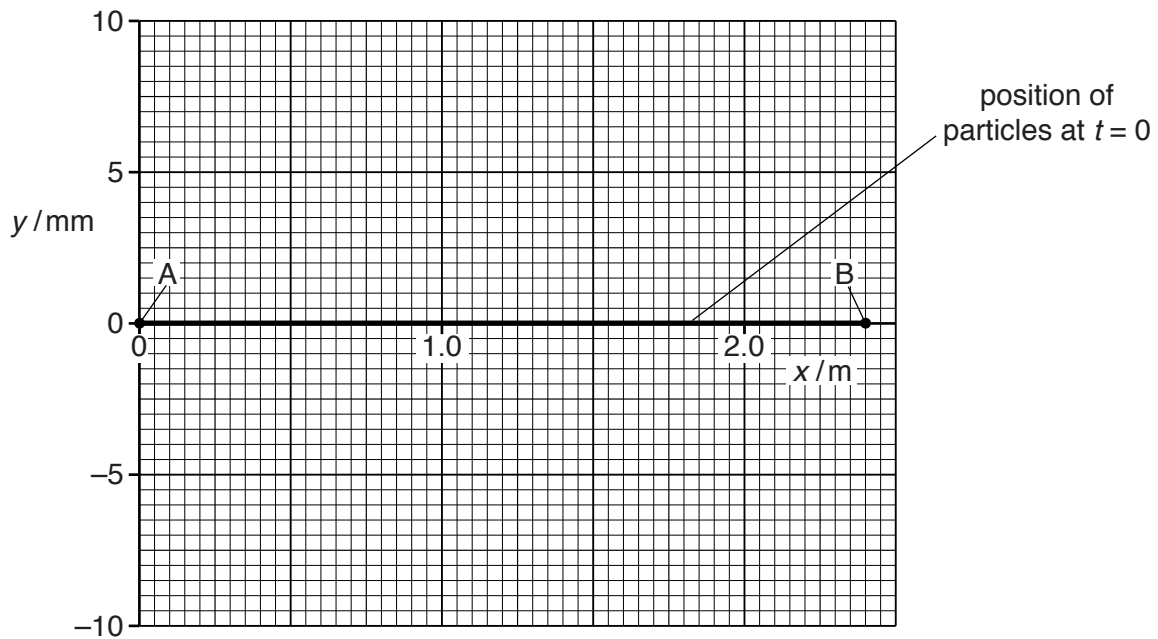


Fig. 5.1

The wave has a period of 20 ms and a wavelength of 1.2 m. The maximum amplitude of the particles of the string is 5.0 mm.

- (i) On Fig. 5.1, draw a line to represent the position of the string at  $t = 5.0$  ms. [2]

- (ii) State the phase difference between the particles of the string at  $x = 0.40$  m and at  $x = 0.80$  m.

phase difference = ..... unit ..... [1]

- (iii) State and explain the change in the kinetic energy of a particle at an antinode between  $t = 0$  and  $t = 5.0$  ms. A numerical value is not required.

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..... [2]