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. .....

.....

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.

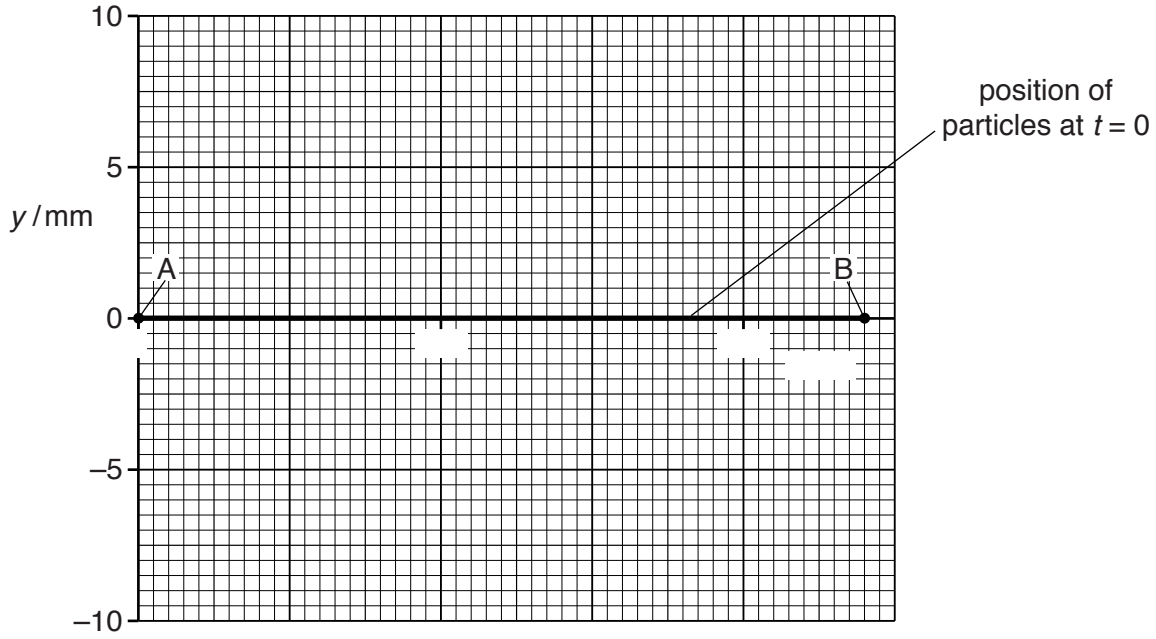

Fig. 5.1

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.

.....

.....

.....

.....[2]