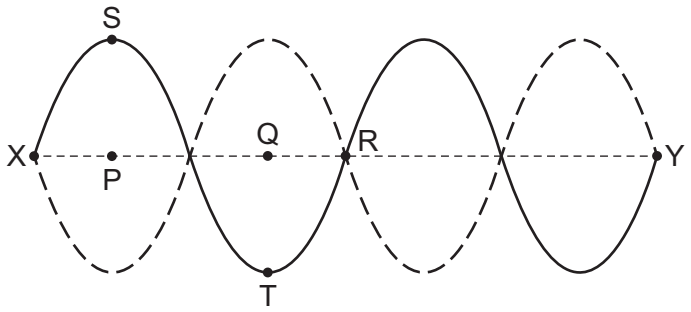
27 The diagram shows a string stretched between fixed points X and Y. There is a stationary wave on the string.



The solid curve shows the string at a position of maximum displacement. The dashed curve shows the other position of maximum displacement. The straight central dashed line shows the mean position of the string. Point S on the string is directly above point P. Point T on the string is directly below Q.

Which statement is correct?

A A short time later, point R on the string will be displaced.

B Points S and T on the string move in opposite directions.

C The distance between P and Q is one wavelength.

D Two points on the string that are equal distances from point R vibrate in phase.

28 Which statement **must** be true for diffraction to occur when a wave passes through a gap?

A The wave is able to travel in a vacuum.

B The wave is progressive.

C The wave has a large amplitude.

D The wave has a long wavelength.

29 Light of a single wavelength is incident normally on two slits that are 0.20 mm apart. Interference fringes are observed on a screen that is 5.4 m away from the slits. The distance between successive bright fringes is 12 mm.

What is the wavelength of the light?

A 440 nm **B** 540 nm **C** 650 nm **D** 900 nm