

- 5 (a) Explain the principle of superposition.

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 [2]

- (b) Sound waves travel from a source S to a point X along two paths SX and SPX, as shown in Fig. 5.1.

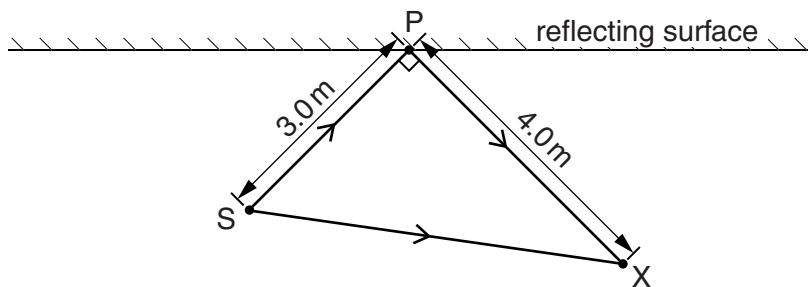


Fig. 5.1

- (i) State the phase difference between these waves at X for this to be the position of

1. a minimum,

phase difference = unit [1]

2. a maximum.

phase difference = unit [1]

- (ii) The frequency of the sound from S is 400 Hz and the speed of sound is 320 ms^{-1} . Calculate the wavelength of the sound waves.

wavelength = m [2]

- (iii) The distance SP is 3.0 m and the distance PX is 4.0 m. The angle SPX is 90° . Suggest whether a maximum or a minimum is detected at point X. Explain your answer.

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 [2]