

AS Level Physics A
H156/02 Depth in physics

Question Set 20

1 (a)

Fig. 5 shows the variation with distance of the displacement for two progressive waves **P** and **Q**.

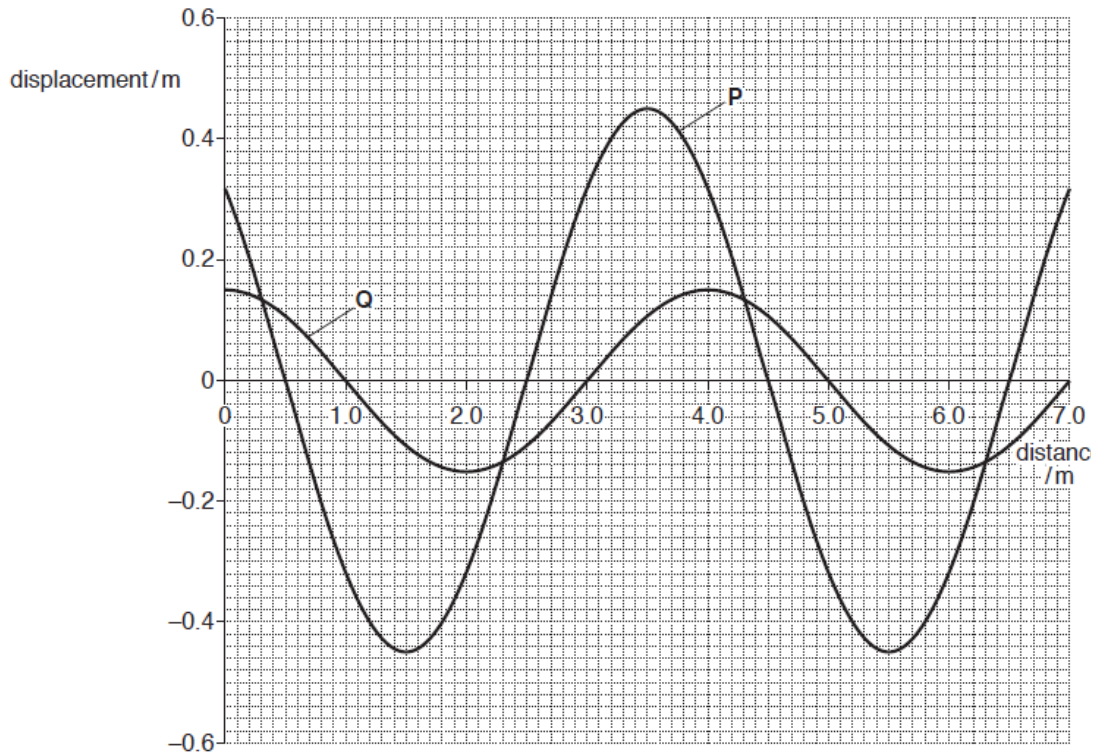


Fig. 5

(i) State the amplitude of wave **P**.

amplitude = _____ m

[1]

(ii) State the wavelength of wave **P**.

wavelength = _____ m

[1]

(iii) Determine the phase difference, in radians, between wave **P** and wave **Q**.

phase difference = _____ rad

[2]

(iv) Determine the ratio $\frac{\text{intensity of wave P}}{\text{intensity of wave Q}}$.

ratio = _____

[2]

(b)*

A student wishes to investigate how the fringe spacing x of an interference pattern produced by sound waves varies with the frequency f of the sound waves.

It is suggested that $\frac{v}{f} = \frac{ax}{D}$ where

a is the separation of the sources of sound

D is the distance from the sources of sound to the interference maxima and minima

v is the speed of sound in air.

Describe with the aid of a suitable diagram how an experiment can be safely conducted in the laboratory, and how the data can be analysed to determine v .

[6]

Total Marks for Question Set 20: 12

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