

- 4 (a) State what is meant by the *Doppler effect*.

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[2]

- (b) A child sits on a rotating horizontal platform in a playground. The child moves with a constant speed along a circular path, as illustrated in Fig. 4.1.

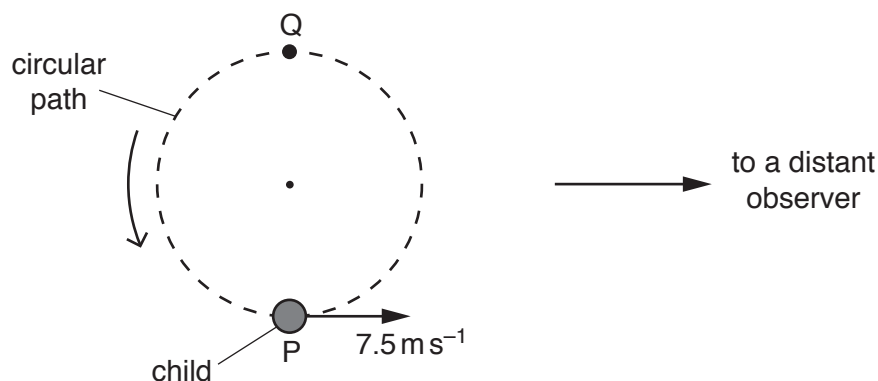


Fig. 4.1

An observer is standing a long distance away from the child. During one particular revolution, the child, moving at a speed of 7.5 m s^{-1} , starts blowing a whistle at point P and stops blowing it at point Q on the circular path.

The whistle emits sound of frequency 950 Hz . The speed of sound in air is 330 m s^{-1} .

- (i) Determine the maximum frequency of the sound heard by the distant observer.

maximum frequency = Hz [2]

- (ii) Describe the variation in the frequency of the sound heard by the distant observer.

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[2]

[Total: 6]