5 **(a)** Two waves, each having the same amplitude and a frequency of 1700 Hz, travel in opposite directions at a speed of 340 m s^{-1}. A stationary wave of maximum intensity I_0 is formed as the result of the superposition of these two waves.

On Fig. 5.1, sketch a line to show the variation with distance x from a node of the intensity of the stationary wave for values of x from $x = 0$ to $x = 0.4$ m.

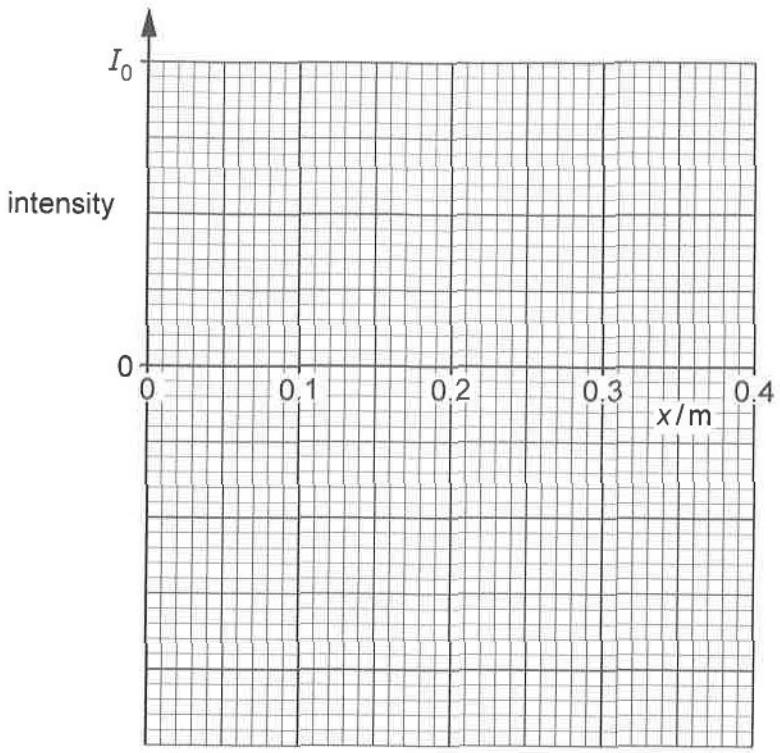

Fig. 5.1

[3]

(b) A sound wave has a frequency of 250 Hz and passes a point X.

On Fig. 5.2, sketch a line to show the variation with time t of the change in air pressure due to the wave passing X. Your line should extend from $t = 0$ to $t = 8.0$ ms.

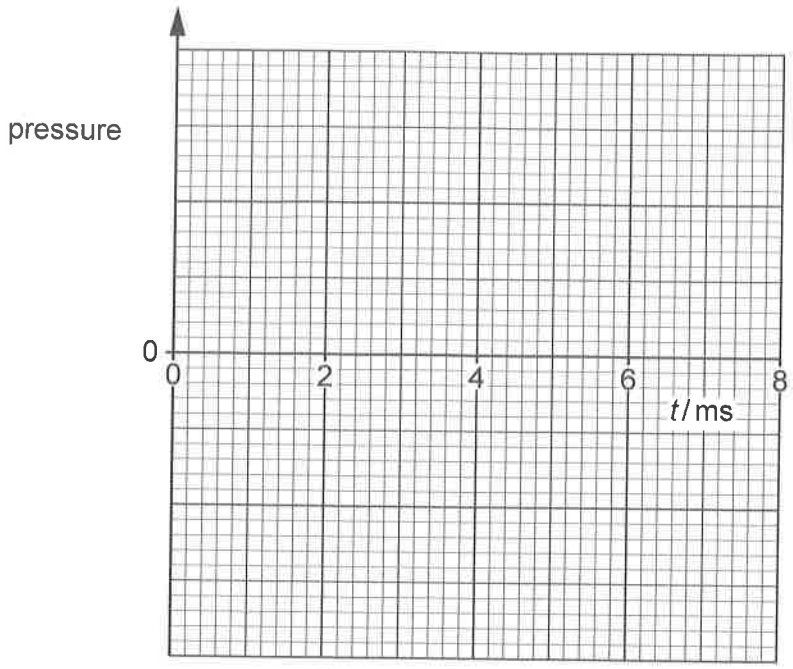

Fig. 5.2

[2]

(c) A constant current in a flat coil of radius r produces a magnetic field of flux density B_0 at its centre.

On Fig. 5.3, sketch a line to show the variation with radius r of the magnetic flux density at the centre of the coil for constant current in the coil and for constant number of turns.

Your line should extend for values of radius from r to $3r$.

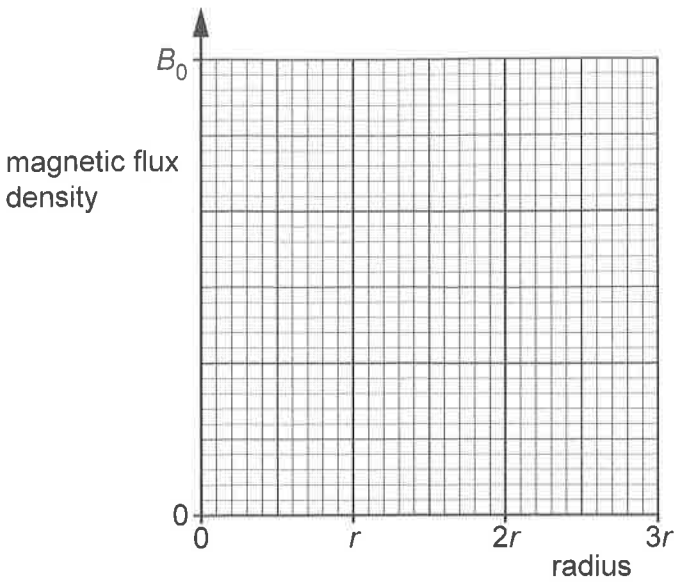

Fig. 5.3

[3]

[Total: 8]