6 The variation with time t of the sinusoidal current I in a resistor $450\,\Omega$ is shown in Fig. 6.1.
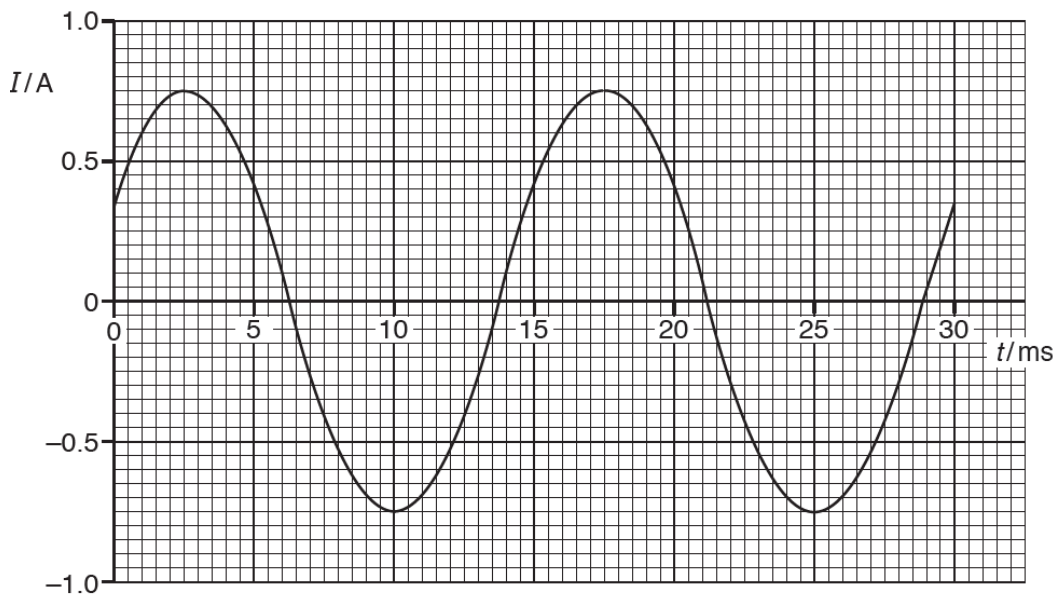

Fig. 6.1

Use data from Fig. 6.1 to determine, for the time $t = 0$ to $t = 30$ ms,

(i) the frequency of the current,

frequency = …………………..……………………… Hz [2]

(ii) the root-mean-square (r.m.s) current,

r.m.s current = ………………………………………… A [2]

(iii) the energy dissipated by the resistor.

energy = ………………………………………………… J [2]

(iv) The average current in the resistor is zero.

Explain why there is a heating effect in the resistor.

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………………………………………………………………………………………..………….[2]

[Total: 8]