6 The variation with time t of the current I in a resistor is shown in Fig. 6.1.

For Examiner's Use

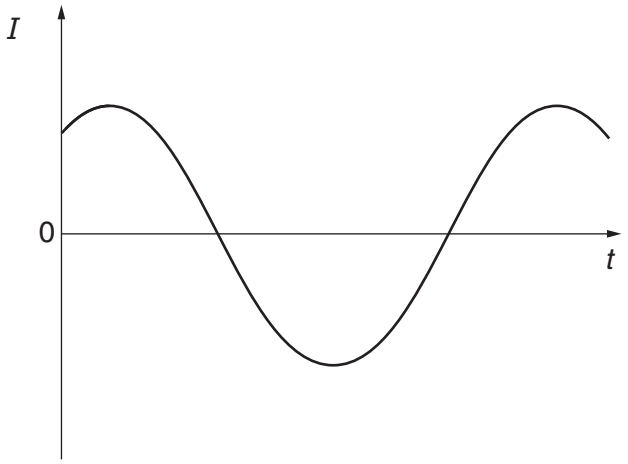

Fig. 6.1

The variation of the current with time is sinusoidal.

(a) Explain why, although the current is not in one direction only, power is converted in the resistor.

.....

.....

..... [2]

(b) Using the relation between root-mean-square (r.m.s.) current and peak current, deduce the value of the ratio

$$\frac{\text{average power converted in the resistor}}{\text{maximum power converted in the resistor}}.$$

ratio = ... [3]