

- 5 An alternating current varies with time in the way shown in Fig. 5.1.

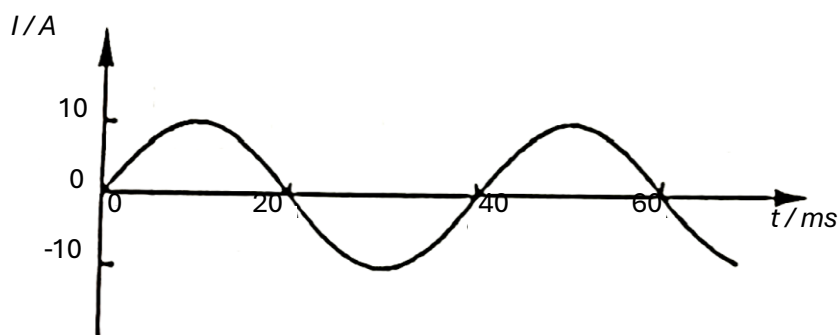


Fig. 5.1

- (a) (i) By reference to heating effect, explain what is meant by the *root-mean-square* (r.m.s.) value of an alternating current.

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.....

..... [2]

- (ii) Determine the frequency of the alternating current.

frequency = ..... Hz [1]

- (iii) Determine the peak value of the alternating current.

peak value of current = ..... A [1]

- (iv) Determine the root-mean-square value of the alternating current.

root-mean-square value of current = ..... A [1]

- (v) In the space below, sketch a graph to show how the power supplied by this alternating current to a resistor of resistance  $5\ \Omega$  varies with time. Label values of peak power and period on the Y-axis and X-axis respectively.

- (b) (i) Explain what is meant by an *ideal transformer*.

.....

..... [1]

- (ii) The current shown in Fig. 5.1 is in the 300-turn primary coil of an ideal transformer. The secondary coil of the transformer has 6000 turns. Calculate the transformer's peak output current.

peak output current = ..... A [2]

[Total: 10]

