

[2]

The diagram shows a rectangular magnetic core. A solenoid, consisting of many closely spaced turns of wire, is wound around the central vertical leg of the core. A secondary coil, labeled 'coil C', is wound around the top horizontal leg of the core. The solenoid is connected to an 'a.c. supply' at the bottom. Labels with leader lines identify 'coil C' and the 'solenoid'.

Coil C has 86 turns.

$$\Phi = 6.8 \times 10^{-6} \times I$$

where I is the current in the solenoid.

The variation with time t of the current I in the solenoid by the a.c. supply is shown in Fig. 6.2.

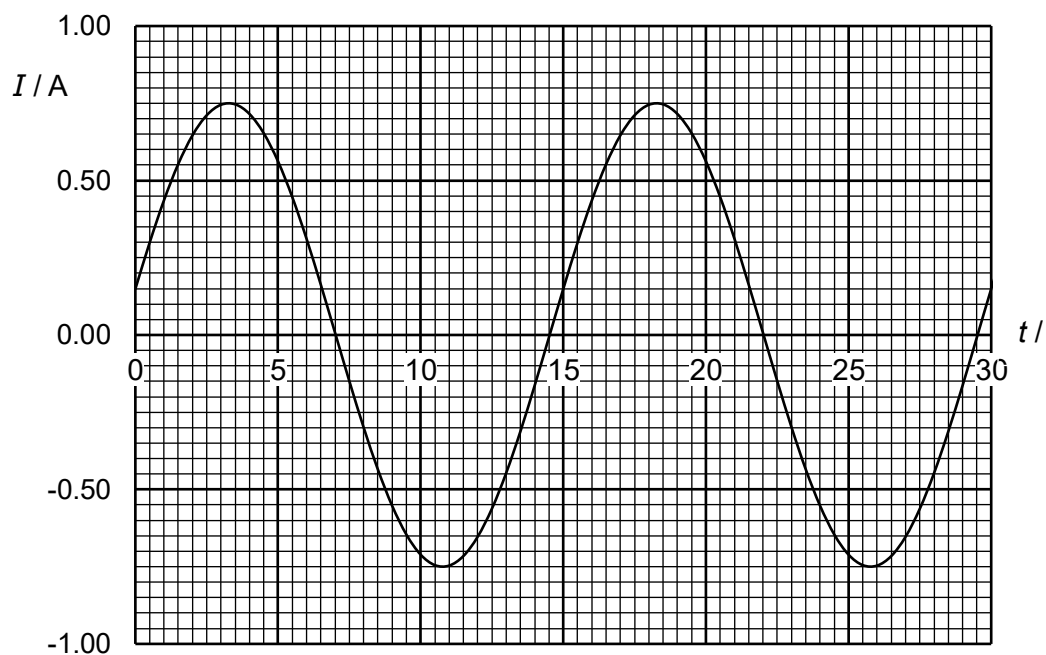


Fig. 6.2

- (i) Explain how electromotive force (e.m.f.) is induced in coil C.

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- (ii) Use Fig. 6.2 to determine the maximum e.m.f. induced in coil C.

e.m.f. = V [2]

(iii) The a.c supply is changed to a non-sinusoidal periodic wave as shown in Fig. 6.3.

On Fig. 6.3, draw the corresponding e.m.f. that is induced in coil C.

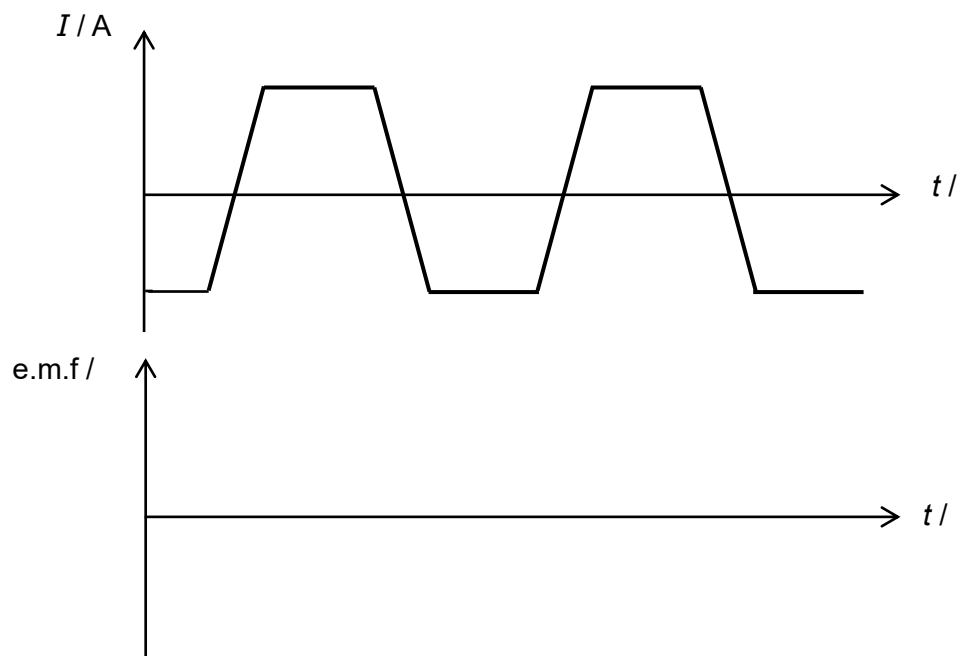


Fig. 6.3

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