6 **(a)** Define *magnetic flux*.

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.....[2]

(b) A solenoid has a coil C of wires wound tightly about its centre, as shown in Fig. 6.1.

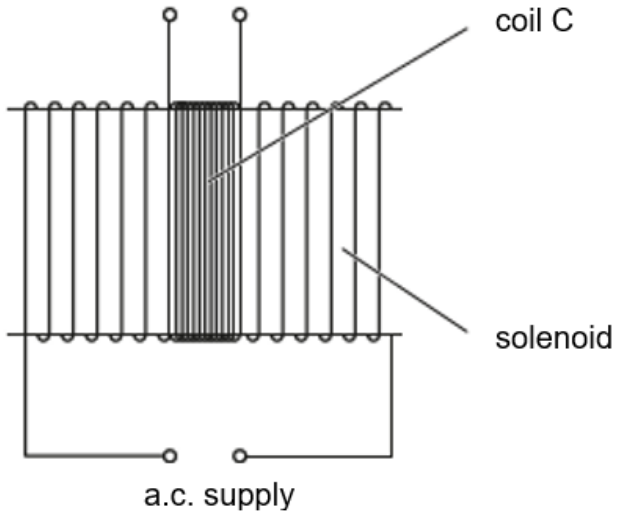

Fig. 6.1

Coil C has 86 turns.

The uniform magnetic flux Φ (in weber) in the solenoid is given by the expression

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

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.

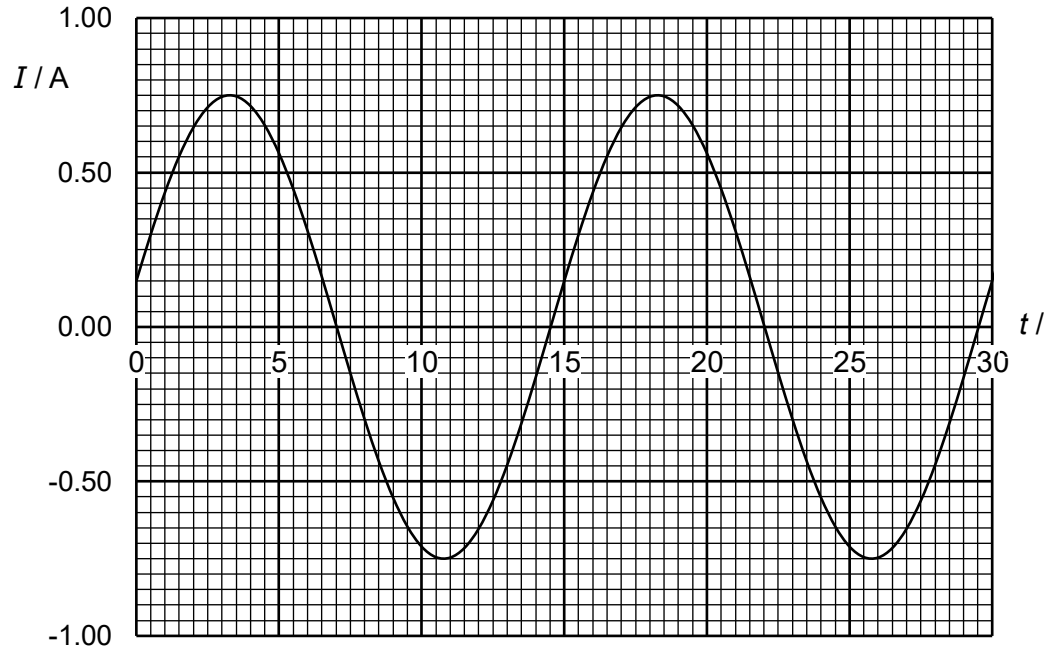

Fig. 6.2

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

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.....[2]

(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.

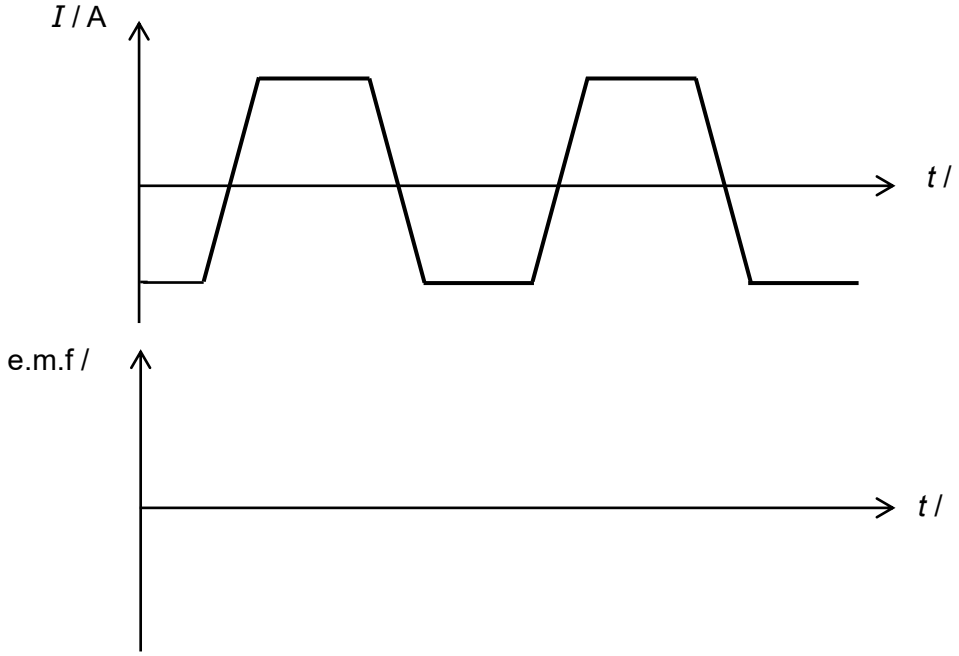

Fig. 6.3

[2]

[Total: 8]