

- 5 (a) (i) State Coulomb's law for the force between two point charges.

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 [1]

- (ii) Two point charges are situated in a vacuum and separated by a distance R . The force between the charges is F_C .

On Fig. 5.1, sketch a graph to show the variation of the force F between the charges with separation x for values of x from $x = R$ to $x = 4R$.

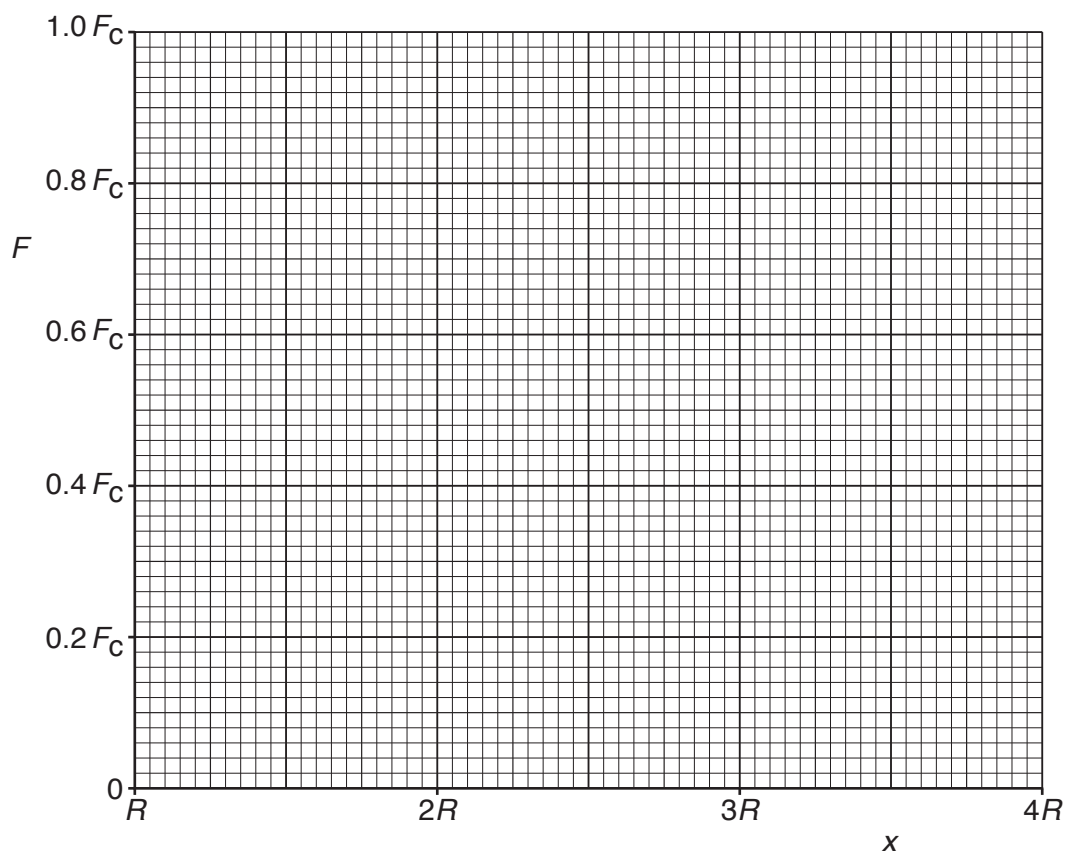


Fig. 5.1

[3]

- (b) Two coils C and D are placed close to one another, as shown in Fig. 5.2.

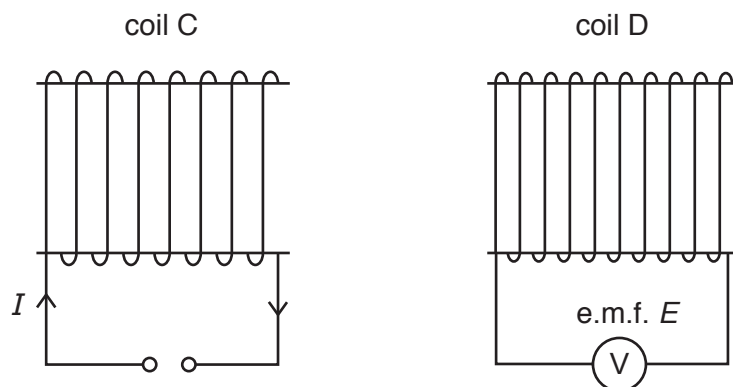


Fig. 5.2

The variation with time t of the current I in coil C is shown in Fig. 5.3.

On Fig. 5.4, show the variation with time t of the e.m.f. E induced in coil D for time $t = 0$ to time $t = t_5$.

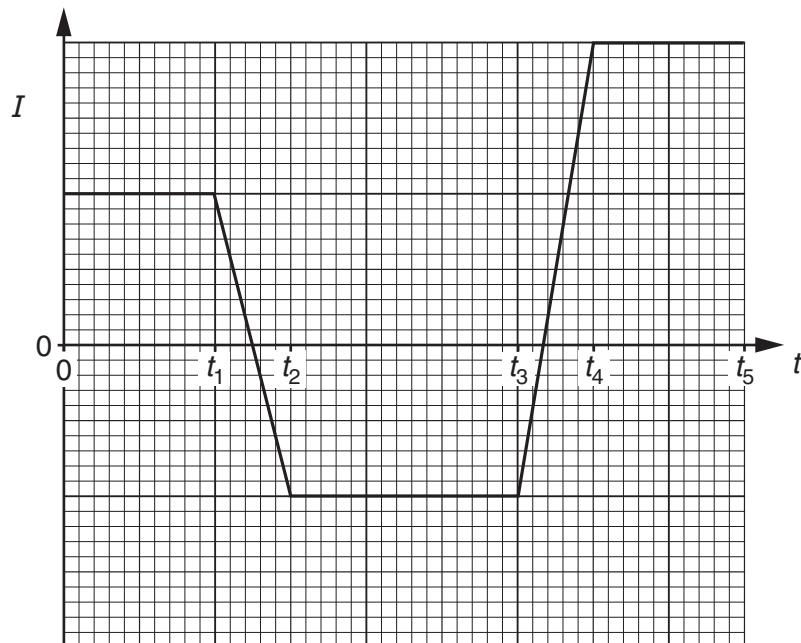


Fig. 5.3

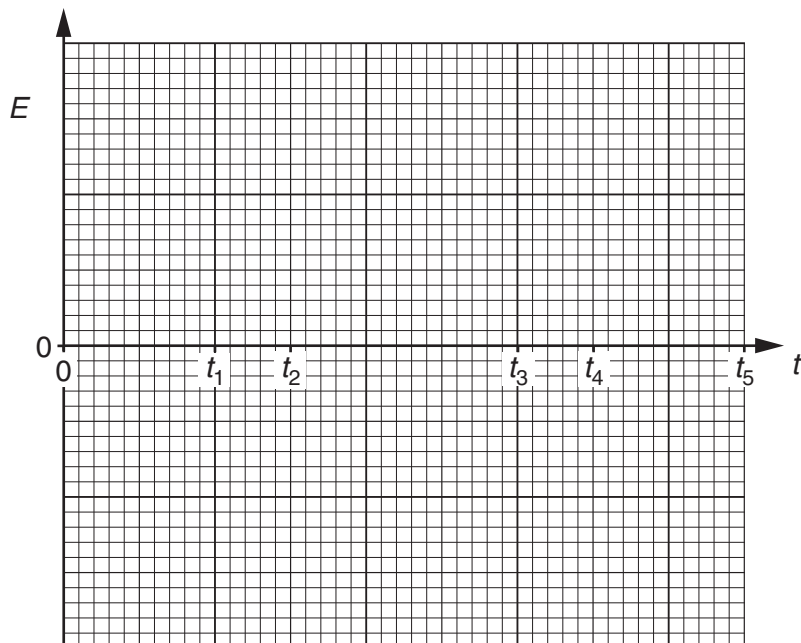


Fig. 5.4

[4]

[Total: 8]