6 **(a)** Two similar coils **A** and **B** of insulated wire are wound on to a soft-iron core, as illustrated in Fig. 6.1.

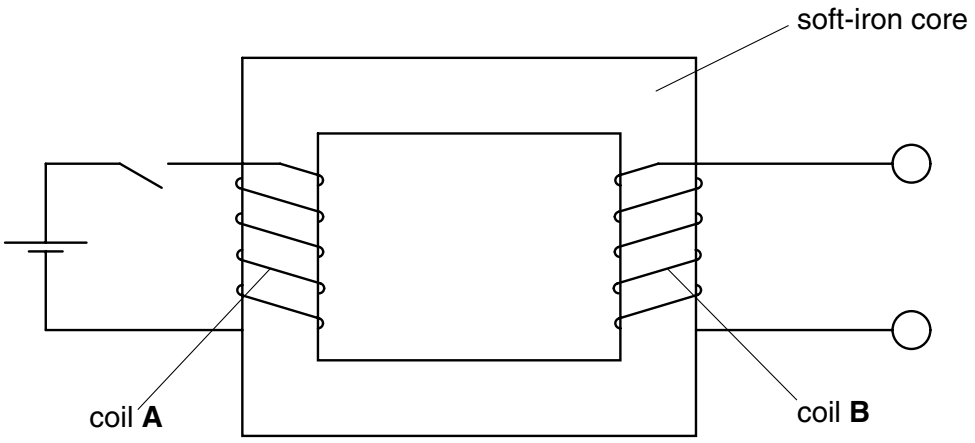

Fig. 6.1

When the current I in coil **A** is switched on and then off, the variation with time t of the current is shown in Fig. 6.2.

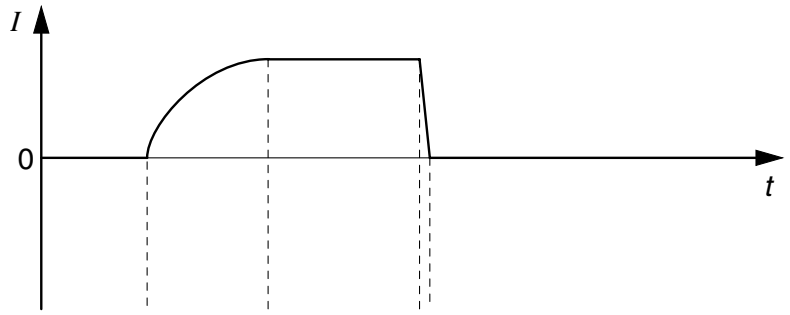

Fig. 6.2

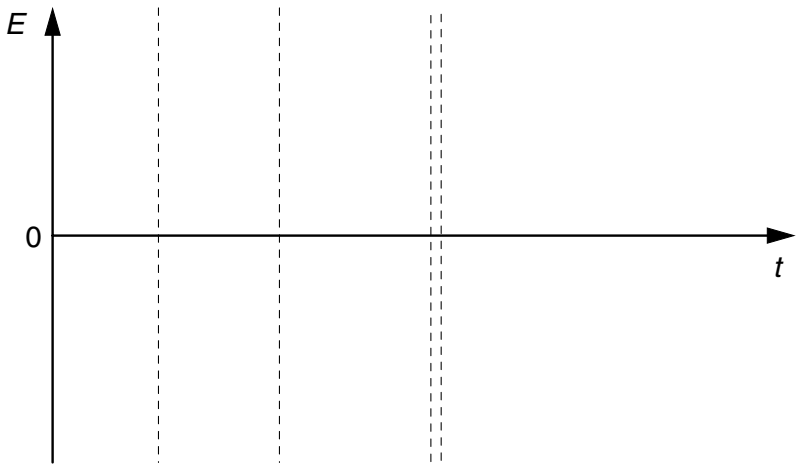

Fig. 6.3

On Fig. 6.3, draw a graph to show the variation with time t of the e.m.f. E induced in coil **B**. [3]

(b) Fig. 6.4 is the circuit of a bridge rectifier.

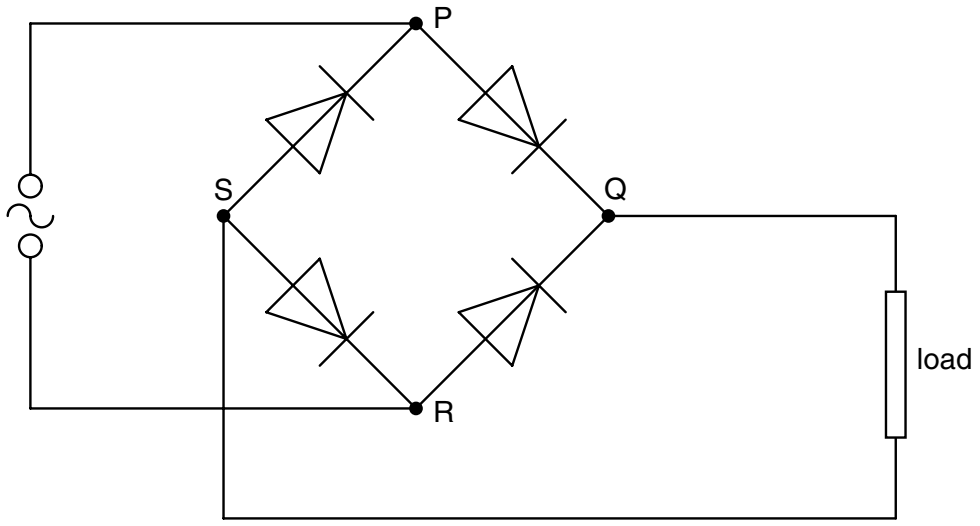

Fig. 6.4

An alternating supply connected across PR has an output of 6.0 V r.m.s.

(i) On Fig. 6.4, circle those diodes that are conducting when R is positive with respect to P. [1]

(ii) Calculate the maximum potential difference between points Q and S, assuming that the diodes are ideal.

potential difference = ... V [2]

(iii) State and explain how a capacitor may be used to smooth the output from the rectifier. You may draw on Fig. 6.4 if you wish.

.....

.....

.....[3]