6 A bridge rectifier consists of four ideal diodes A, B, C and D, connected as shown in Fig. 6.1.
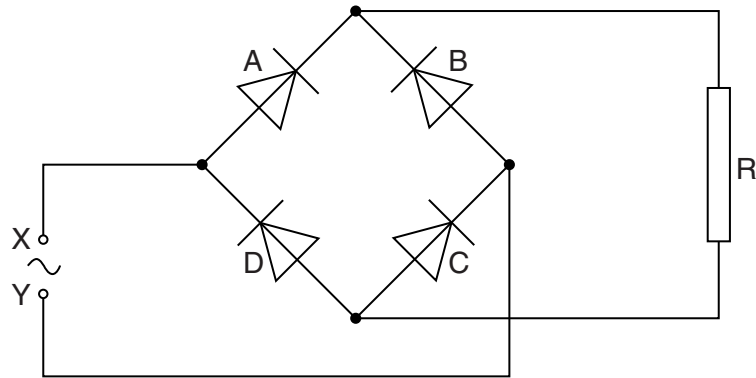

Fig. 6.1

An alternating supply is applied between the terminals X and Y.

(a) (i) On Fig. 6.1, label the positive (+) connection to the load resistor R. [1]

(ii) State which diodes are conducting when terminal Y of the supply is positive.

diode .... and diode ....[1]

(b) The variation with time *t* of the potential difference *V* across the load resistor R is shown in Fig. 6.2.

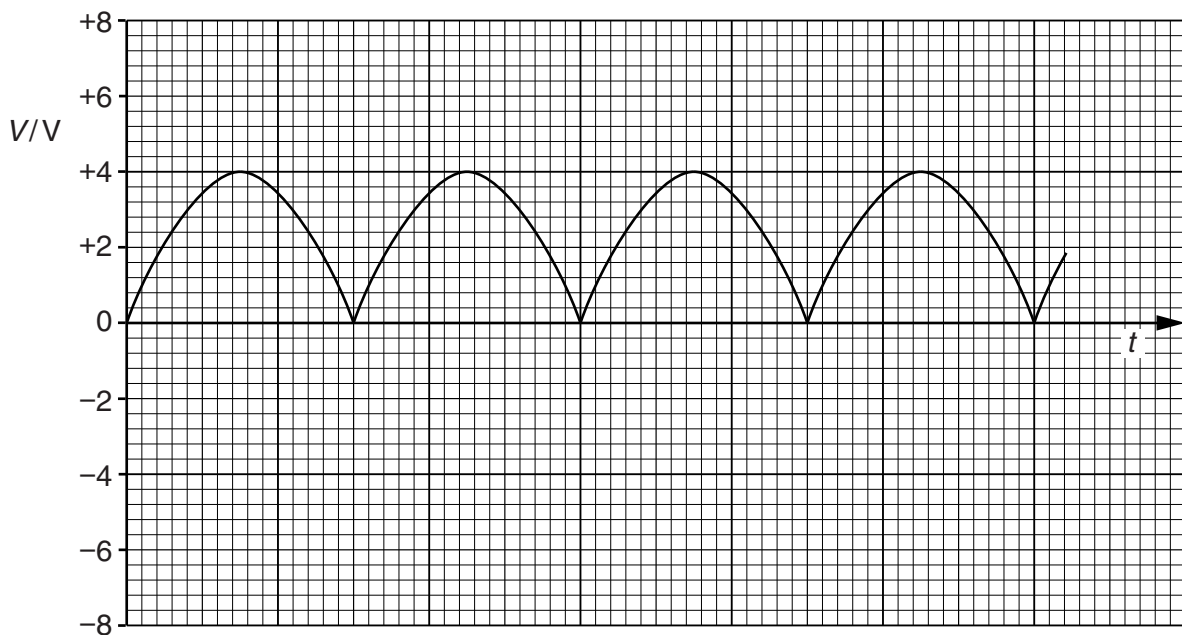**Fig. 6.2**

The load resistor R has resistance 2700 Ω.

   (i) Use Fig. 6.2 to determine the mean power dissipated in the resistor R.

power = ... W [3]

   (ii) On Fig. 6.1, draw the symbol for a capacitor, connected so as to increase the mean power dissipated in the resistor R. [1]

(c) The capacitor in **(b)(ii)** is now removed from the circuit.
The diode A in Fig. 6.1 stops functioning, so that it now has infinite resistance.

On Fig. 6.2, draw the variation with time *t* of the new potential difference across the resistor R. [2]