7 **(a)** Alternating current (a.c.) is converted into direct current (d.c.) using a full-wave rectification circuit. Part of the diagram of this circuit is shown in Fig. 7.1.

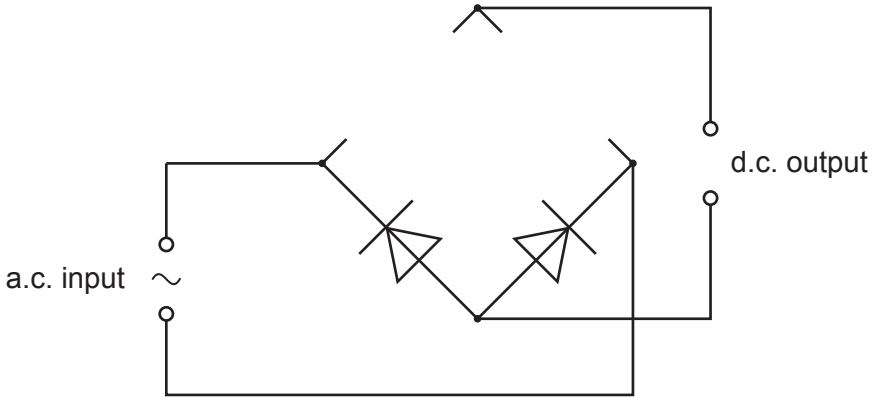

Fig. 7.1

(i) Complete the circuit in Fig. 7.1 by adding the necessary components in the gaps. [1]

(ii) On Fig. 7.1 mark with a + the positive output terminal of the rectifier. [1]

(b) The output voltage V of an a.c. power supply varies sinusoidally with time t as shown in Fig. 7.2.

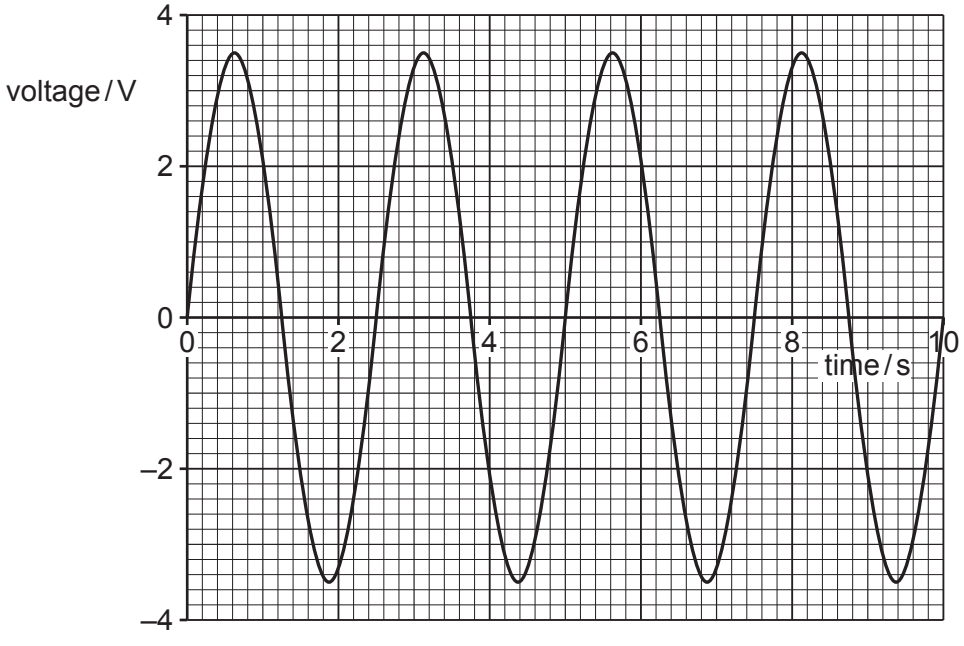

Fig. 7.2

(i) Determine the equation for V in terms of t, where V is in volts and t is in seconds.

V = ... [2]

(ii) The supply is connected to a 12 Ω resistor. Calculate the mean power dissipated in the resistor.

mean power = ... W [2]

[Total: 6]