

10 The output potential difference (p.d.) of an alternating power supply is represented by

$$V = 320 \sin(100\pi t)$$

where V is the p.d. in volts and t is the time in seconds.

- (a) Determine the root-mean-square (r.m.s.) p.d. of the power supply.

r.m.s. p.d. = V [1]

- (b) Determine the period T of the output.

$T =$ s [2]

- (c) The power supply is connected to resistor R and a diode in the circuit shown in Fig. 10.1.

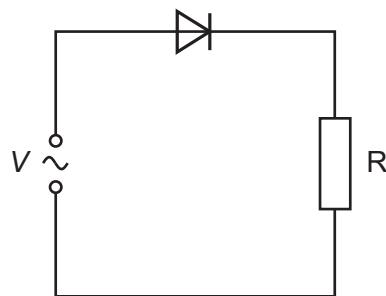


Fig. 10.1

- (i) State the name of the type of rectification produced by the diode in Fig. 10.1.

..... [1]

- (ii) On Fig. 10.2 sketch the variation with time t of the p.d. V_R across R from time $t = 0$ to time $t = 40\text{ ms}$.

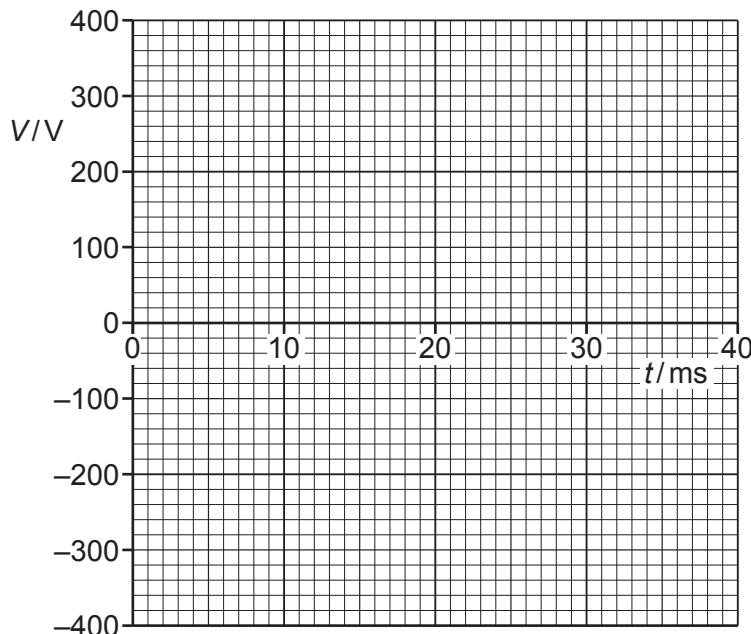


Fig. 10.2

[3]

- (iii) On Fig. 10.1, draw the symbol for a component that may be connected to produce smoothing of V_R .

[1]