

8 An incomplete circuit diagram of a bridge rectifier is shown in Fig. 8.1.

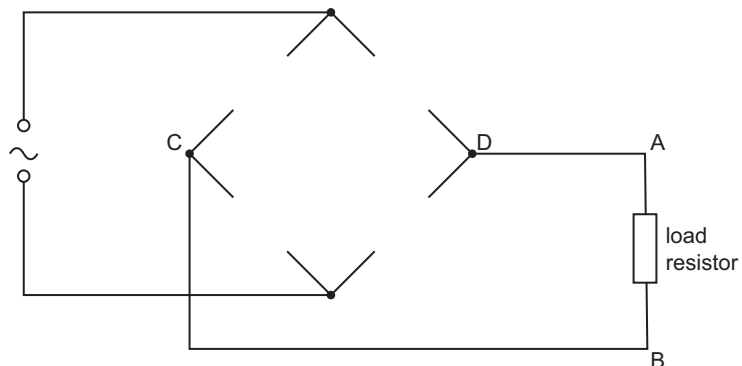


Fig. 8.1

- (a) Complete Fig. 8.1 for the bridge rectifier such that the point A is at a positive potential with respect to point B. [2]
- (b) The variation with time t of the potential difference (p.d.) V across the load resistor is shown in Fig. 8.2.

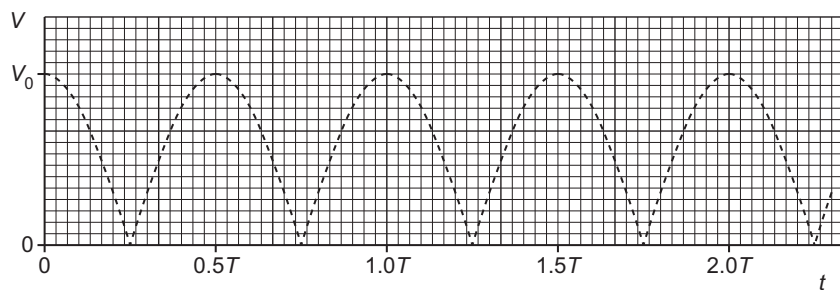


Fig. 8.2

A capacitor is now connected between points C and D of the bridge rectifier. This results in smoothing of the p.d. across the load resistor. The difference between the maximum and minimum values of the smoothed p.d. is 33% of the peak p.d. V_0 .

- (i) On Fig. 8.2, draw a line to show the variation of the potential difference V across the load resistor with time t . Your line should extend from $t = 0.5T$ to $t = 2.0T$. [3]

- (ii) Use your line in (b)(i) to determine, in terms of T , the time constant of the smoothing circuit.

time constant = T [3]

- (iii) The resistance of the load resistor is now increased. The capacitance of the capacitor is unchanged.

State and explain the effect of this change on the smoothed output p.d.

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..... [2]

[Total: 10]