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

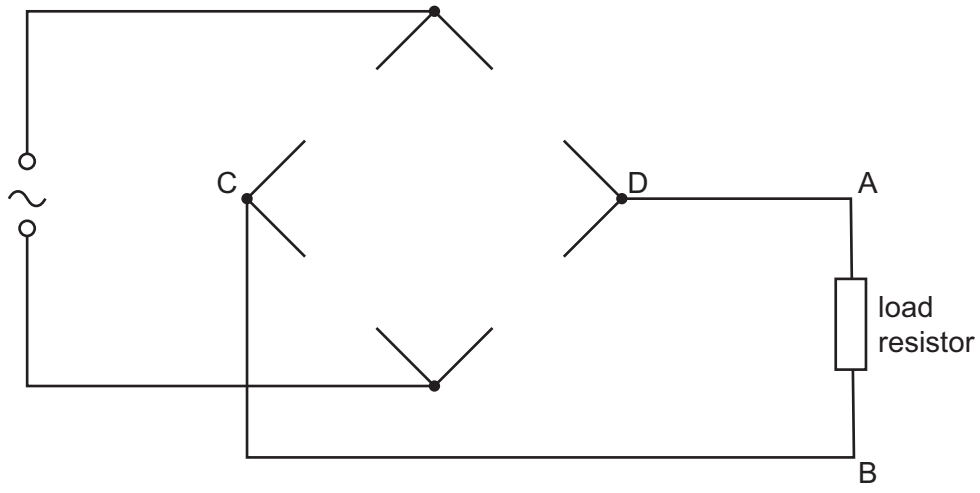

Fig. 8.1

(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.

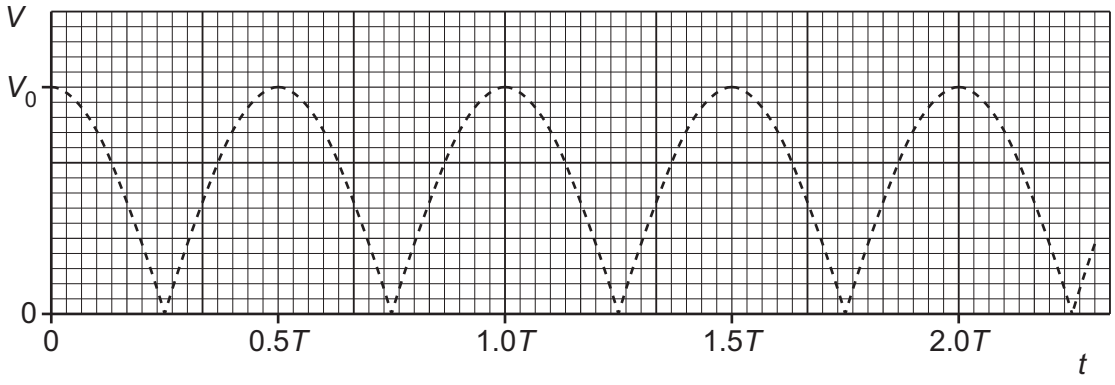

Fig. 8.2

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.

.....

.....

..... [2]

[Total: 10]