7 A sinusoidal alternating voltage is to be rectified.

For Examiner's Use

(a) Suggest one advantage of full-wave rectification as compared with half-wave rectification.

.....

..... [1]

(b) The rectification is produced using the circuit of Fig. 7.1.

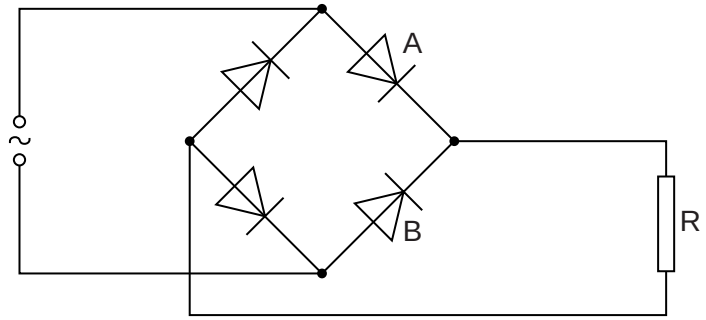

Fig. 7.1

All the diodes may be considered to be ideal.

The variation with time *t* of the alternating voltage applied to the circuit is shown in Fig. 7.2 and in Fig. 7.3.

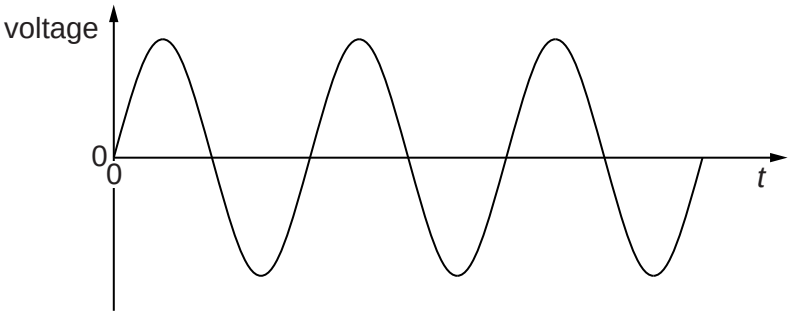

Fig. 7.2

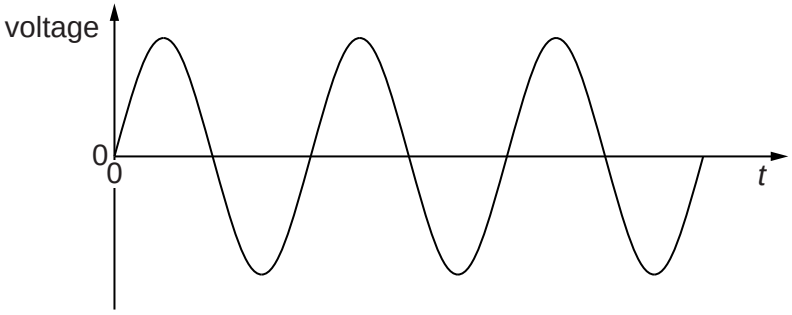

Fig. 7.3

(i) On the axes of Fig. 7.2, draw a graph to show the variation with time *t* of the potential difference across diode A. [1]

(ii) On the axes of Fig. 7.3, draw a graph to show the variation with time *t* of the potential difference across diode B. [1]

(c) (i) On Fig. 7.1, draw the symbol for a capacitor, connected into the circuit so as to provide smoothing. [1]

(ii) Fig. 7.4 shows the variation with time *t* of the smoothed potential difference across the resistor R in Fig. 7.1.

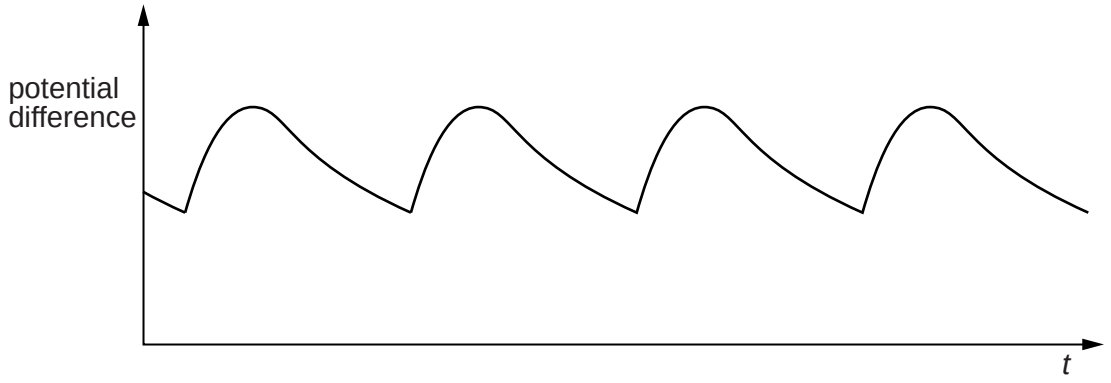

Fig. 7.4

1. State how the amount of smoothing may be increased.

.....

..... [1]

2. On Fig. 7.4, draw the variation with time *t* of the potential difference across resistor R for increased smoothing. [2]