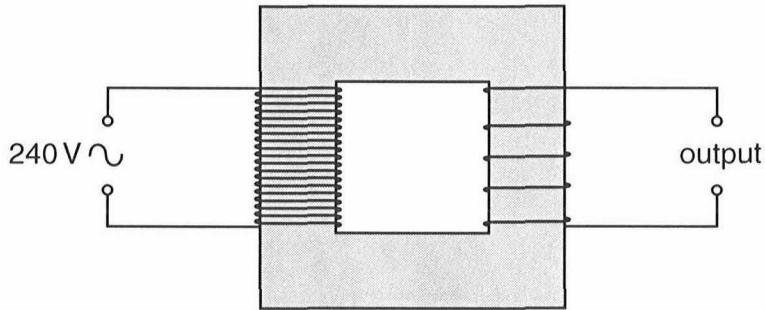


- 4 (a) State Faraday's law of electromagnetic induction.

.....  
 .....  
 ..... [2]

- (b) An ideal transformer is illustrated in Fig. 4.1.



**Fig. 4.1**

The input potential difference is 240V r.m.s. The **maximum** output potential difference is 9.0V.

There are 260 turns of wire on the secondary coil.

- (i) Calculate the number of turns of wire on the primary coil.

number = ..... [3]

- (ii) Use Faraday's law to explain whether the output and the input potential differences are in phase.

.....  
 .....  
 .....  
 ..... [3]