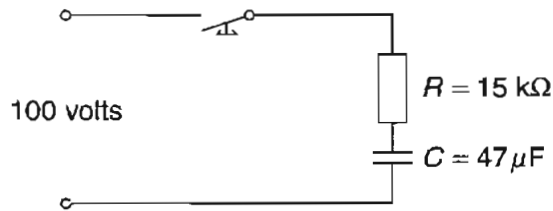


**Question 20** (5 marks)

An electrical circuit is shown.



Calculate, showing all working:

- (a) the time constant for the circuit;

2

$$\tau = \frac{100 \times 15}{47} = 54.53.62'$$

- (b) the maximum circuit current;

1

$$I = \frac{V}{R} \quad I = \frac{100}{15} \quad I = 6.66 \text{ A}$$

- (c) the value of resistance to be added to change the time constant to one second.

2

$$3 \Omega$$