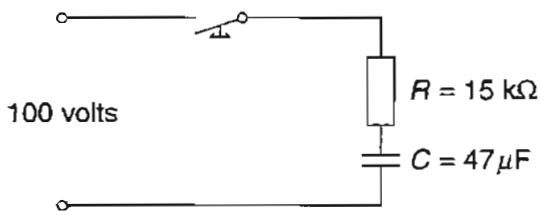
Question 20 (5 marks)

An electrical circuit is shown.



Calculate, showing all working:

(a) the time constant for the circuit; **2**

$TC = RC$

$= 15k\Omega \times 47\mu F$

$= 0.705$ Sec

(b) the maximum circuit current; **1**

$I = \frac{V}{R}$

$= \frac{100}{15000}$ $= 6.67mA$

(c) the value of resistance to be added to change the time constant to one second. **2**

$TC = RC$

$1 = R \times 47\mu F$

$\frac{1}{47\mu F} = 12$ $R = 21276.52$

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