Quiz 1

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Submitted By

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Course: Electrical Circuits (EEE141)

Section: 05

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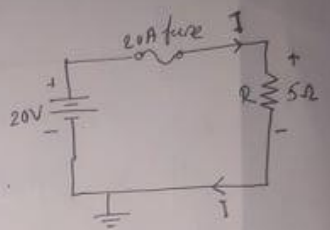
Answer to question No: 1.

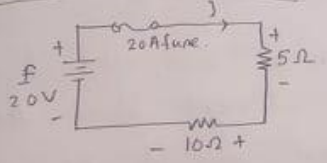
As it's series circuit current is same all through the circuit.

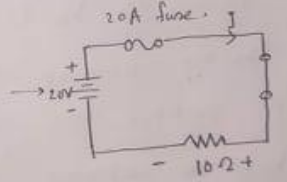


So, Current, $I = \frac{E}{R_T} = \frac{20V}{5\Omega} = 4A$.

As the I_{max} current through circuit is 4A; so, the fuse won't break if current exceeds limitations

Answer to question No: 2.



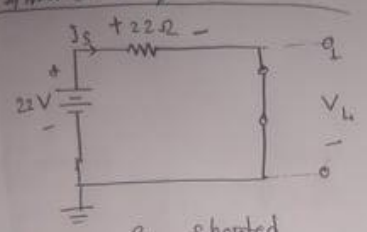


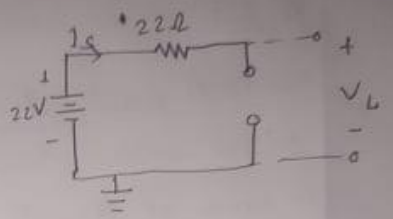
If a short circuit occurs at 5Ω resistor the total resistance in the series circuit would be 10Ω.

So, current through the resistor, $I = \frac{E}{R} = \frac{20V}{10\Omega} = 2A$

20A fuse won't break; it would remain same albeit when current exceeds limitation for the load.

Answer to question NO: 3.





R_L shorted

If R_L shorted out, $I_S = \frac{E}{R_T} = \frac{22\,V}{22\Omega} = 1A$.

And if R_L is replaced by

And, it would be, 22 - 1 as it is shorted

so V_L would be zero.

Again, if V_L is open circuit,

then, current through the circuit would be zero; As no current flows. And, voltage across load would be same as source, $E = V_L = 22V$ as no drop occur across 22Ω resistor

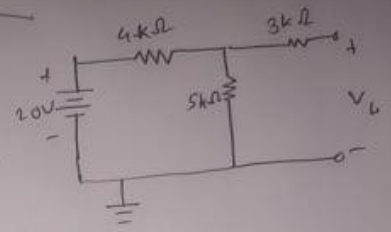
Answer to question No: 4.

(a) Here,

$R_T = (4+5)k\Omega = 9k\Omega$.

So, $I_S = \frac{E}{R_T} = \frac{20}{9} = 2.22mA$.

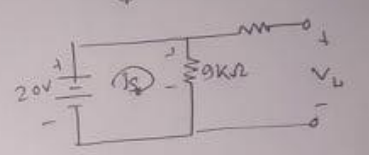
$V_L = E = 20V$.

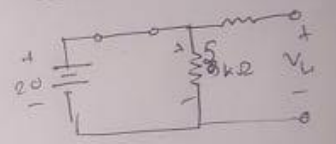


(b) If 4kΩ shorted,

$I_S = \frac{20}{5k\Omega} = 4mA$.

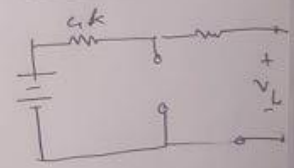
$V_L = E = 20V$.





(c) If 5kΩ = open circuit

There would be zero current flows through resistor. So, $I_S = 0A$.



And, Voltage across load same as source. As both are same node.