NUST School of Electrical Engineering and Computer Science
(Department of Electrical Engineering)
(Linear Circuit Analysis EE 111)

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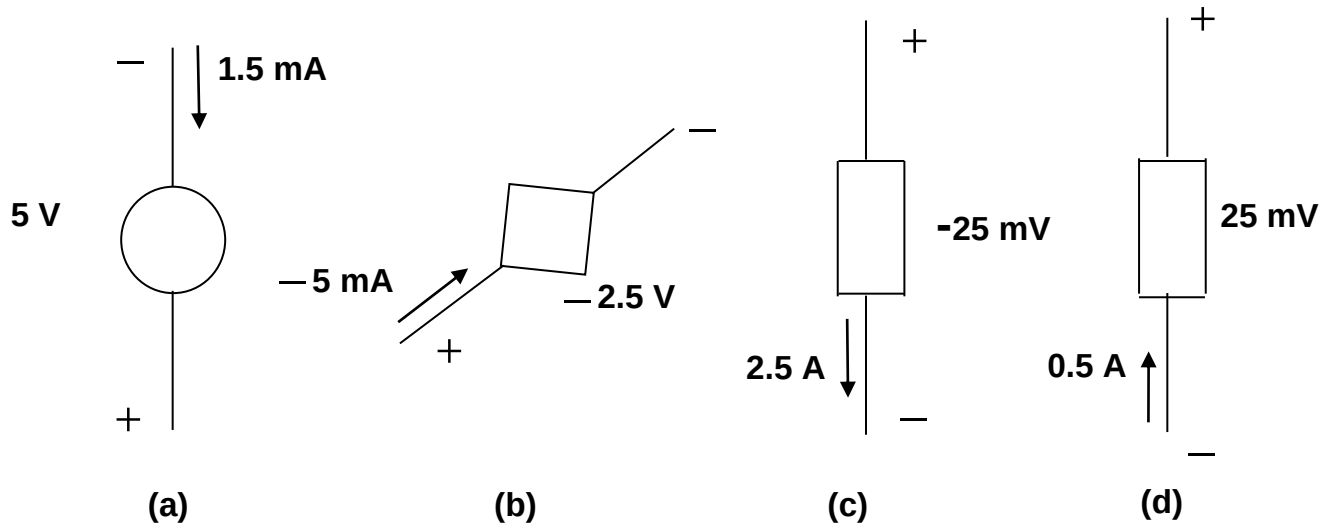
Regn No/Sec : **345834 BEE-12C**

Test HA No 1 : Passive Sign Convention (CLO 1)

Justify and calculate if the power is being absorbed / dissipated / generated by the circuit element in the figures below. State your answer clearly.



(a) Generated

(b) Absorbed

(c) Generated

(d) Generated

Reasoning:

(a) Since current of +1.5mA is entering the negative terminal, it does not follow the Passive Sign Convention. So, to make the circuit abide by the convention, we reverse the direction of current so that -1.5mA current goes into the positive terminal. Then, by P = vi, we get the power generated by the circuit element 7.5 milliWatts.

(b) Since current of -5mA is entering the positive terminal, it is following the Passive Sign Convention. Using P = vi, we get the power absorbed by the circuit element 1.25×10^{-2} Watts.

(c) Since current of +2.5A is moving out of negative terminal / entering the positive terminal, it is following the Passive Sign Convention. However, the voltage in this case is negative and hence causes negative power to be absorbed / generated which is of the value 6.25×10^{-2}.

(d) Since current of +0.5A is entering the negative terminal, it does not follow the Passive Sign Convention. So, to make the circuit abide by the convention, we change the direction of current so that -0.5A current goes into the positive terminal. Then, by P = vi, we get the power generated by the circuit element 1.25×10^{-2} Watts.