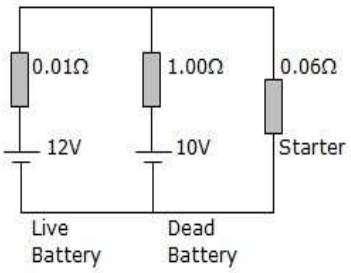
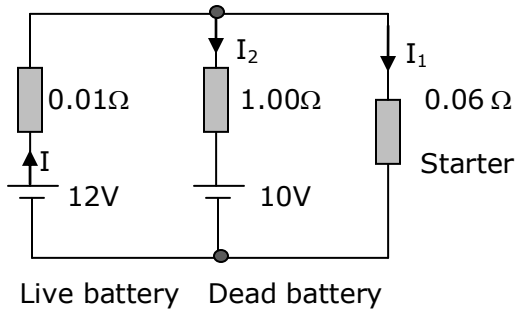
Q- A dead battery is charged by connecting it to the live battery of another car with jumper cables. Determine the current in the starter and in the dead battery.





Let the current through the live battery is I, that through the starter be I_1 and through dead battery is I_2 then according to junction law the current through the live battery will be $I = I_1 + I_2$.

Applying the loop rule to the loop of both batteries for a current in clockwise direction we have

$$12 - 10 = 0.01(I_1 + I_2) + I_2*1.00$$

Or $0.01*I_1 + 1.01*I_2 = 2$ ---------- (1)

Applying loop rule to the loop of the live battery and the starter in clockwise direction we have

$$12 = 0.01*(I_1 + I_2) + 0.06*I_1$$

Or $0.07*I_1 + 0.01*I_2 = 12$ ---------- (2)

Solving the two equations we have

$I_2 = 0.283$ A

And $I_1 = 171.388$ A

Hence the current through the starter **$I_1 = 171.388$ A**

And the current through the dead battery **$I_2 = 0.283$ A**