ENGR-2910-101

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Due: 03/18/2020

**Homework-08**

Question 1

A close up of a clock

Description automatically generated

A: 144 = 4×ia +10× (ia -ib)

B: 0 = 10× (ib – ia) + 80×ib +

C: 0 = 5×ic-

B+C: 0 = 90×ib -10×ia+5×ic

ic-ib=3A

I get ia=11A, ib=1A, ic=4A √

so, **(20V)**

Question 2

A close up of text on a white background

Description automatically generated

Mesh a: -230+(ia-ic) +2(ia-ib) +115+4ia=0

Mesh b: -115+2(ib-ia) +3(ib-ic) +460+5ib=0

Mesh c: 6ic+3(ic-ib) +(ic-ia) =0

I get ia=4.4A, ib=-36.8A, ic=-10.6A √

And,

, check

Question 3

A screenshot of a cell phone

Description automatically generated

Mesh a: 0=-30+3(ia-ic) +20(ia-ib) + 7ia

Mesh b: 0=-30+2ib+20(ib-ia) +5(ib-ic)

Mesh c: 0=53+5(ic-ib) +3(ic-ia)

So, ia=52A, ib=60A, ic=110A, =52-60=-8A, V=53× (-8) =-424V √

Question 4

A close up of text on a white background

Description automatically generated

Mesh a: 5+38(ia-ic) +30(ia-ib) +12ia=0

Mesh b: 67+6(ib-ic) +40ib+30(ib-ia) =0

Mesh c: 6(ic-ib) +38(ic-ia) +V=0

Ic=5A

So, I get ia=2.5A, ib=0.5A, ic=5A, and V=-122V √

, check

⟹**source 5A providing power, 5V and 67V absorbing power.**

Question 5

A close up of text on a white background

Description automatically generated

**Yellow circle is super-mesh. And voltage for 10mA source is V, +sign on the left, and – sign on the right.**

Mesh b: 0.5(ib-ia) +V+4(ib-ic) =0

Mesh d: id- V=0

⟹ 0.5(ib-ia) +4(ib-ic) +id=0

Mesh a: 30+5ia+0.5(ia-ib) =0

Mesh c: 80+ 4(ic-ib) =0

Ib-id=10

So, I get ia=-10mA, ib=-50mA, ic=-70mA, id=-60mA.

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