Homework 1.1

Homework due Jun 15, 2022 23:59 +06 Completed

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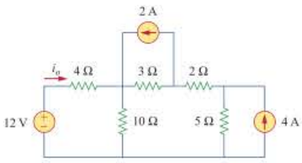
HW 1.1.1

2/2 points (graded)



Which of these statements are true for the above circuit? Assume bottom node as the reference node. There might be more than one correct answer here.

- [ ] There are 5 nonreference node in this circuit.
- [x] $4A$ current source and 5Ω resistor are in parallel.
- [x] There is 0 supernode in this circuit.
- [ ] 3Ω and 2Ω resistors are in series.[x] correct

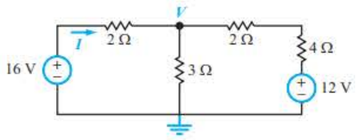
Show answer

Submit You have used 3 of 3 attempts

Correct (2/2 points)

HW 1.1.2

2.0/2.0 points (graded)



Find the value of I in the above circuit

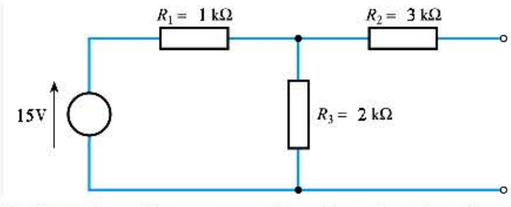
- ○ 1
- ○ 2
- ◉ 3
- ○ 4

Save | Show answer

Submit You have used 1 of 3 attempts

H.W 1.1.3

2.0/2.0 points (graded)



Determine the open-circuit output voltage of the above circuit.

- ○ $5V$
- ○ $6.82V$
- ○ $8.18V$
- ◉ $10V$

Save | Show answer

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Homework 1.2

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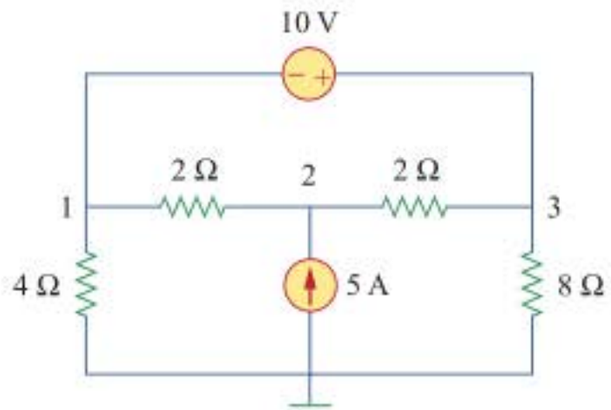
HW 1.2.1

5/5 points (graded)



Use the node equation for the node 2 to **write a formula for v_2 in terms of v_1, v_3 and constant terms.**

Assume voltage of node 1 , 2 and 3 are v_1, v_2 and v_3, write node equation and solve for v_2,(e.g. $v_2 = v_1 - v_3/10 + 98$ then insert $v_1 - v_3/10 + 98$ as your answer). use v_1 for v_1.

v_1/2+v_3/2+5

$\frac{v_1}{2} + \frac{v_3}{2} + 5$

Save | Show answer

Submit You have used 1 of 5 attempts

✔ Correct (5/5 points)

Homework 1.3

Homework due Jun 15, 2022 23:59 +06

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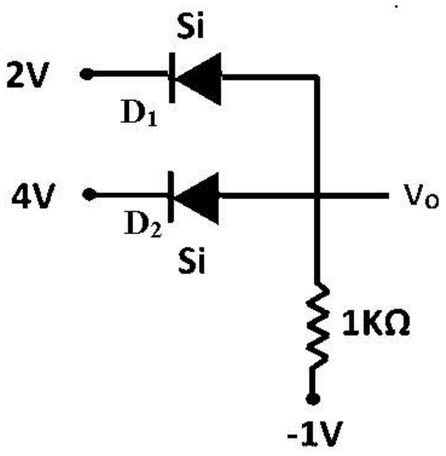
HW 1.3.1

3/3 points (graded)

Answer all the questions for this following circuit configaration.



If we assume D_1 and D_2 are ON, which of the following statement is contradicting our assumption?

- [ ] If D_1 is ON, it will force D_2 to be ON.
- [ ] All the currents cannot leave the node with voltage V_0.
- [x] There couldn't be two values of voltage for V_0.
- [ ] No contradiction is present here.

✔

Save | Show answer

Submit You have used 1 of 3 attempts

✔ Correct (3/3 points)

HW 1.3.2

4/4 points (graded)

If we assume D_1 is ON and D_2 is OFF, which of the following statement is contradicting our assumption?

- [ ] If D_1 is ON, it will force D_2 to be ON.
- [x] All the currents cannot leave the node with voltage V_0.
- [ ] There couldn't be two values of voltage for V_0.
- [ ] No contradiction is present here.

✔

Save | Show answer

Submit You have used 1 of 3 attempts

✔ Correct (4/4 points)

HW 1.3.3

3/3 points (graded)

Find the value of V_0.

-1 ✔

-1

Save | Show answer

Submit You have used 1 of 3 attempts

✔ Correct (3/3 points)

Homework 1.4

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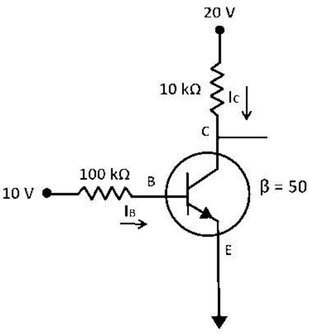
HW 1.4.1

2/2 points (graded)

Answer all the questions for this following circuit configaration.



In this problem we are going to assume that the transistor is in forward active mode. Therefore, we are going to use the voltage and current relationships for forward active mode. Emitter is connected to ground here. For forward active mode $V_{BE} = 0.7$ and in this particular circuit forward current gain $\beta = 50$.

Find the value of V_B.

Give your answer in voltage.

0.7 ✔

0.7

Save | Show answer

Submit You have used 1 of 3 attempts

✔ Correct (2/2 points)

HW 1.4.2

6/6 points (graded)

Find the value of I_B.Use Ohm's law. Give your answer in mA.

0.093 ✔

0.093

Find the value of I_C.Use β. Give your answer in mA.

4.65 ✔

4.65

Find the value of V_C. Use Ohm's law. Give your answer in voltage.

-26.5 ✔

-26.5

Save | Show answer

Submit You have used 1 of 4 attempts

✔ Correct (6/6 points)

HW 1.4.3

2/2 points (graded)

Which of the following reason does prove that the BJT is not in forward active mode?

- ○ I_E is now negative.
- ◉ $V_E > V_C$. ✔
- ○ $V_{BE} > 0$.
- ○ $I_C > I_B$.

Save

Submit You have used 1 of 2 attempts

✔ Correct (2/2 points)

HW 1.4.5

6/6 points (graded)

Now use the assumption that BJT is in saturation mode.

Find the value of I_B in mA.

0.092 ✔

0.092

Find the value of I_C in mA.

1.92 ✔

1.92

Find the value of I_E in mA.

2.072 ✔

2.072

Save | Show answer

Submit You have used 1 of 5 attempts

✔ Correct (6/6 points)