



**COLLEGE OF ENGINEERING AND MINES
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING**

COURSE CODE	EE F102 F01 (CRN: 34544)		
COURSE NAME	INTRODUCTION TO ELECTRICAL AND COMPUTER ENGINEERING		
SEMESTER	SPRING		
YEAR	2022		
TYPE AND NUMBER OF SUBMISSION	HOMEWORK 4		
METHOD OF SUBMISSION	ONLINE TO : maher.albadri@alaska.edu		
DATE OF ASSIGNMENT	THURSDAY 03 FEB 2022		
DUE DATE OF SUBMISSION	FRIDAY 11 FEB 2022	DUE TIME OF SUBMISSION	23:59

STUDENT NAME	
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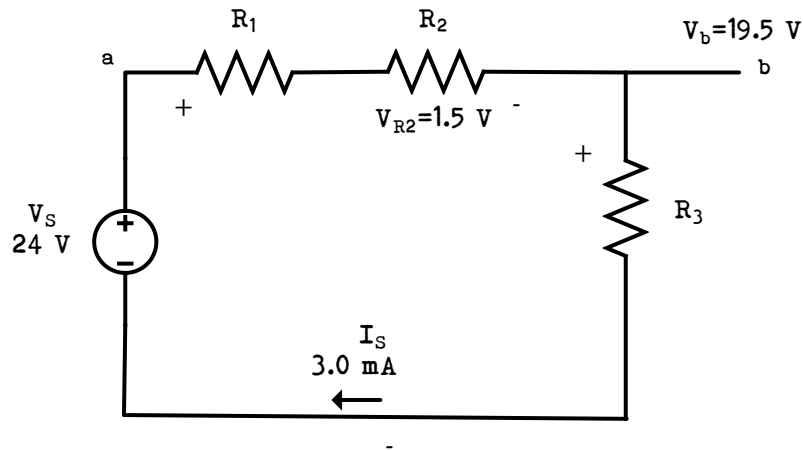
MAKE THIS FORM A "COVER PAGE" FOR YOUR HOMEWORK SUBMISSION.
FOR THE TA USE ONLY
REMARKS:

FOR THE TA USE ONLY		
PROBLEM NUMBER	MAXIMUM POINTS POSSIBLE	POINTS EARNED
PROBLEM 1	50	
PROBLEM 2	50	
PROBLEM 3	50	
TOTAL	150	

Problem HW-4-1

Points
Distribution

For the electric circuit shown with the given information,



- Determine the voltage across R_1 . (10)
- Determine the powers P_1 , P_2 , and P_3 , in mW, consumed in resistors R_1 , R_2 , and R_3 respectively. (15)
- Determine the total power, in mW, supplied by the voltage source. (10)
- Determine the values of resistors R_1 , R_2 , and R_3 , in ohms. (15)

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Problem HW-4-2

Points
Distribution

A 30 m long copper conductor has a cross-sectional area of 0.75 cm^2 and its operating temperature is $35\text{ }^\circ\text{C}$.

The temperature coefficient (α) of the copper wire is 0.00393 per $^\circ\text{C}$ and the resistivity is $1.723 \times 10^{-8}\text{ }\Omega\text{m}$.

- Determine the total resistance of the conductor, in $\text{m}\Omega$. (25)
- Determine the conductor resistance at $140\text{ }^\circ\text{F}$. (25)

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Points
Distribution

Problem HW-4-3

A thermistor has the following initial data:

$$B=5500\text{ }^{\circ}\text{K}$$

$$R_{T_0}=10.5\text{ k}\Omega$$

$$T_0=29\text{ }^{\circ}\text{C}$$

- (a) Determine the resistance, in $\text{k}\Omega$, of the thermistor at the following temperatures: (25)

$$T_1=-20\text{ }^{\circ}\text{C}$$

$$T_2=-15\text{ }^{\circ}\text{C}$$

$$T_3=-10\text{ }^{\circ}\text{C}$$

$$T_4=-5\text{ }^{\circ}\text{C}$$

$$T_5=0\text{ }^{\circ}\text{C}$$

$$T_6=10\text{ }^{\circ}\text{C}$$

$$T_7=20\text{ }^{\circ}\text{C}$$

$$T_8=30\text{ }^{\circ}\text{C}$$

$$T_9=40\text{ }^{\circ}\text{C}$$

$$T_{10}=50\text{ }^{\circ}\text{C}$$

$$T_{11}=100\text{ }^{\circ}\text{C}$$

- (b) Plot the resistance values (y-axis) versus temperature (x-axis). (25)

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