ECE 320 - Homework #3

LEDs, AC to DC Converters. Due Monday, September 13th

Please make the subject "ECE 320 HW#3" if submitting homework electronically to Jacob_Glower@yahoo.com (or on blackboard)

LEDs

The specifications for a Piranah RGB LED are

Color	Vf @ 20mA	mcd @ 20mA
red	2.0V	10,000
green	3.2V	10,000
blue	3.2V	10,000

1) Design a circuit to drive these LEDs with a 5V source to produce Kelly Green:
   - Red = 2784 mcd (71/255)
   - Green = 6156 mcd (157/255)
   - Blue = 2039 mcd (52/255)

2) Design a circuit to drive these LEDs with a 5V source producing Cobalt Blue:
   - Red = 352 mcd (9/255)
   - Green = 3450 mcd (88/255)
   - Blue = 9254 mcd (236/255)

Other colors can be obtained from

https://www.rapidtables.com/web/color/color-wheel.html

AC to DC Converters

For the circuit below:

5) Determine the votlages at V1 and V2 (DC and AC)

6) Build the circuit in CircuitLab (or similar program) and verify your calculations for problem #5

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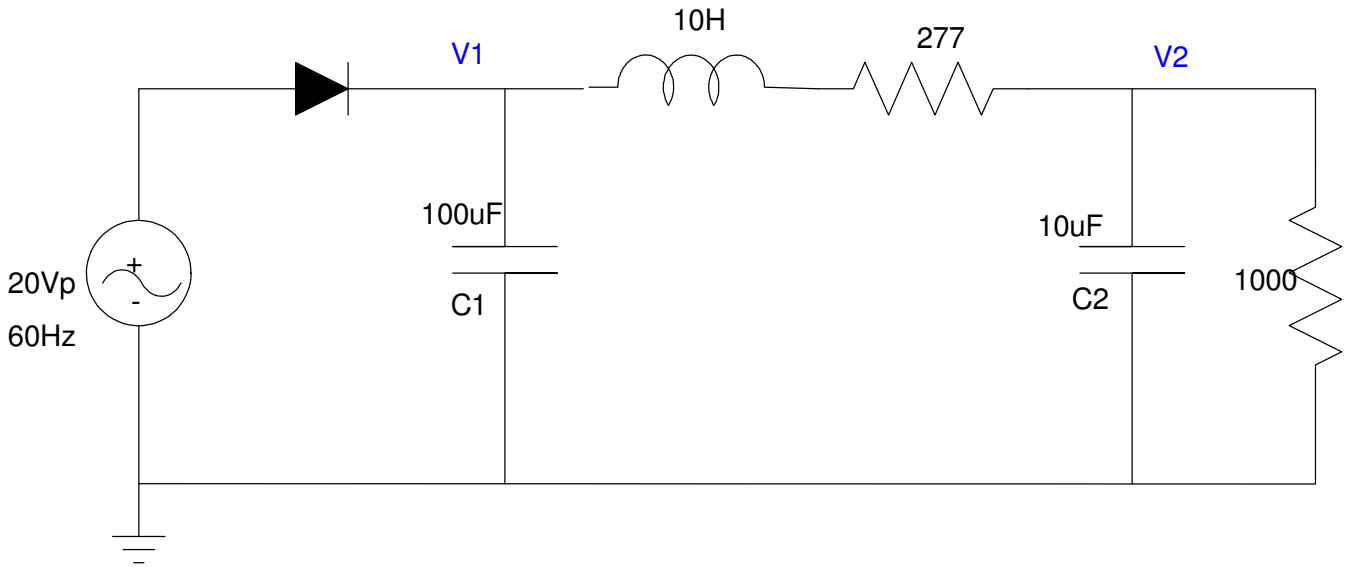
7) Determine C1 and C2 so that AC voltages are: V1 = 2Vpp and V2 = 250mVpp.

8) Build this circuit in CircuitLab (or similar program) and verify your calculations for problem #7



Circuit for problems 5 - 9