ECE 320 - Homework #3

LEDs, AC to DC Converters. Due Monday, September 14th

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 lavender:
   - Red = 9020 mcd (230/255)
   - Green = 6353 mcd (162/255)
   - Blue = 8706 mcd (222/255)

2) Design a circuit to drive these LEDs with a 5V source producing teal blue:
   - Red = 1412 mcd (36/255)
   - Green = 5176 mcd (132/255)
   - Blue = 5373 mcd (137/255)

Other colors can be obtained from

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

AC to DC Converters

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

4) Build the circuit in CircuitLab (or similar program) and verify your calculations for problem #3

5) Determine C1 and C2 so that AC voltages are: V1 = 2Vpp and V2 = 300mVpp.

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