TUTORIAL-2

EE 101: Basic Electronics

DEPARTMENT OF ELECTRONICS & ELECTRICAL ENGINEERING

INDIAN INSTITUTE OF TECHNOLOGY, GUWAHATI

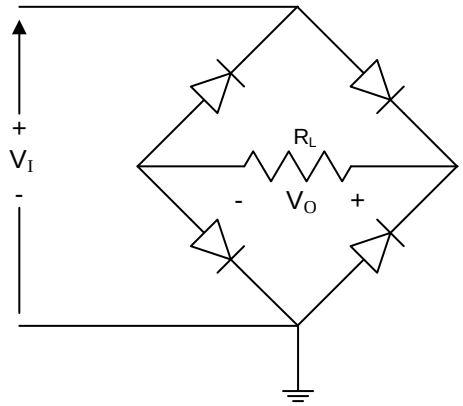
PRE-TUTORIAL ASSIGNMENT- PROBLEM

(To be solved in the space provided.)

1. The bridge rectifier shown in the figure uses ideal diodes with a diode drop of 0.7 V.

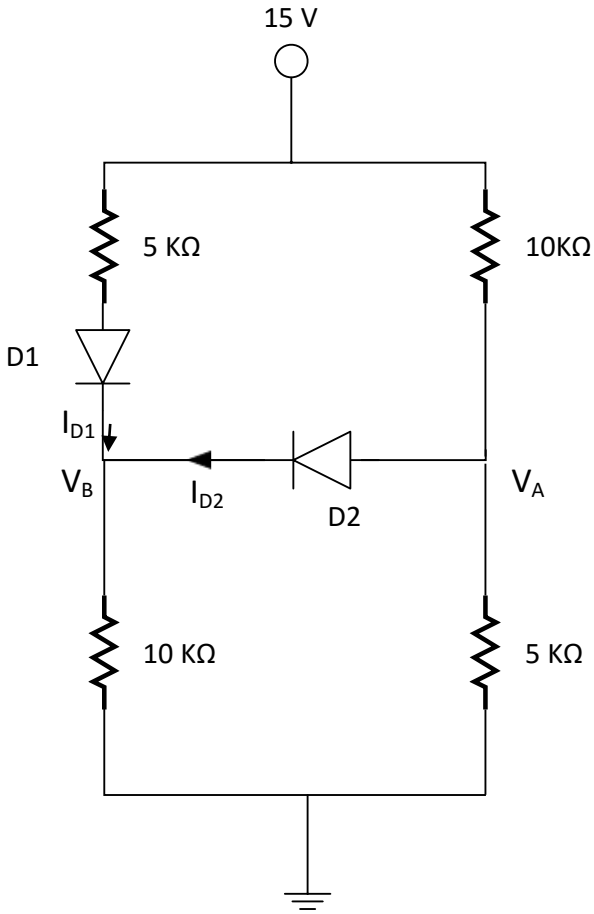
   (a) If the voltage V_I is sinusoidal with 25 V (RMS) and the load resistance R_L is 100 Ω, what is the DC load current?

   (b) What would be the required PIV of the diodes in the circuit?

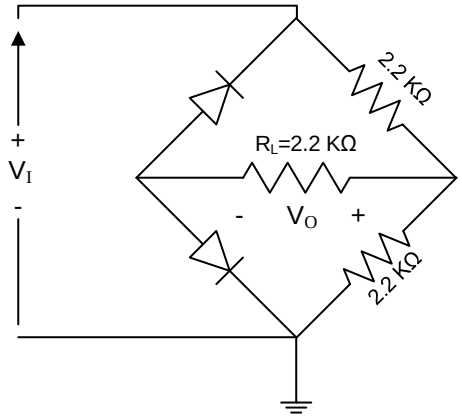


TUTORIAL-2: PROBLEMS

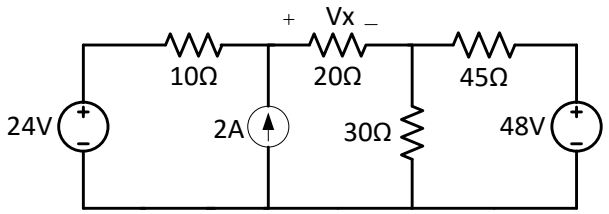
1. For the circuit shown in the figure, what will be the state of the two diodes, D1 and D2? What will be the voltages V_A, V_B and the currents I_{D1} and I_{D2}? Assume that a diode has a forward bias voltage of 0.7 V when it is conducting (i.e. when it is ON).
   (*Hint: There are four possibilities for the diode states of which only one will actually happen. Find this out and use it to find the required voltages and currents*.)



2. Assume that ideal diodes with a diode voltage drop of 0.7 V are used in the circuit given below. Derive the V_O vs. V_I characteristic of this circuit and draw it.



3. Use superposition and source transformation to find the value of V_x for the circuit shown below.



4. Find the voltage across terminal pair xx' for the network shown using Thevenin's Equivalent circuit.