ASSIGNMENT No. 1b

Due Date: 24 January 2020

Basic Circuit Discretizations by MicroTran

Consider the simple RL circuit shown of Assignment 1a.

A step function $e(t)$ is applied at $t = 0$. Solve the circuit for $i(t)$ and $v_L(t)$ from $t = 0$ to $t = 10$ ms as follows:

1. Use MicroTran to simulate the circuit and compare the simulation with your results in Assignment 1a. Since MicroTran uses the trapezoidal rule, only the trapezoidal solutions in Assignment 1a will be considered. Disable the suppression of numerical oscillations flag in the Time Card (flag IOSCL = 1 in column 68) so that you can compare with your own solution exactly.

2. Run the following simulations:
   
   (a) Using MicroTran with $\Delta t_1 = 0.1$ ms.
   (b) Using MicroTran with $\Delta t_2 = 0.8$ ms.

3. Plot the solution with $\Delta t_1 = 0.1$ ms from your own program and from MicroTran on the same graph. Plot the solution with $\Delta t_2 = 0.8$ ms from your own program and from MicroTran on the same graph.

4. Make sure all graphs have labels that identify the variables and conditions.

5. Discuss how MicroTran’s results match your program’s results.