SKEE 1023 (Circuit Theory)

Group Assignment (Problem 01: Circuit Theorems)

Develop a complete circuit that fulfilled the following conditions;

- The circuit has four independent loops with four power sources which are connected at different branches.
- The circuit has one dependent current source and one dependent voltage source with both of them are voltage-controlled types.
- The circuit has one independent voltage source and one independent current source with specified values.
- Two of the power sources (one dependent source and one independent source) have a series connection with a resistor.
- The circuit has supernode and supermesh condition.

a) By assigning some values to the all circuit elements, present a step-by-step method of calculating the certain parameters on one of the passive elements that you have chosen from the circuit. The parameters that need to be calculated are current, voltage and power absorbed. (You need to use both nodal and mesh analysis to answer this problem)
Prove your results by using PSPICE.

b) What are the powers supplied by the dependent sources?

c) Show that the power supplied is equal to the power absorbed from the circuit.