Midterm 1
EE40
Fall 2011

NAME:_____

Instructions

Read all of the instructions and all of the questions before beginning the exam.

There are 4 problems in this exam. The total score is 100 points. Points are given next to each problem to help you allocate time. Do not spend all your time on one problem.

Unless otherwise noted on a particular problem, you must show your work in the space provided, on the back of the exam pages or in the extra pages provided at the back of the exam.

Draw a BOX or a CIRCLE around your answers to each problem.

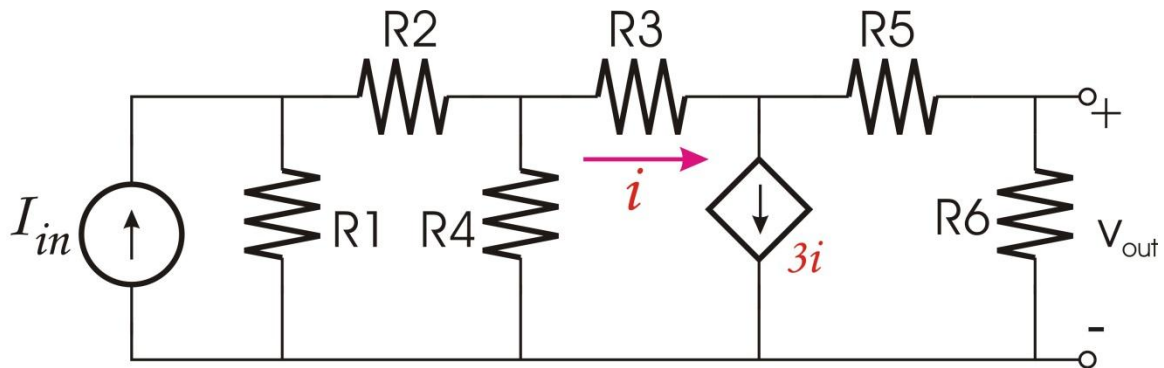Be sure to provide units where necessary.

GOOD LUCK!

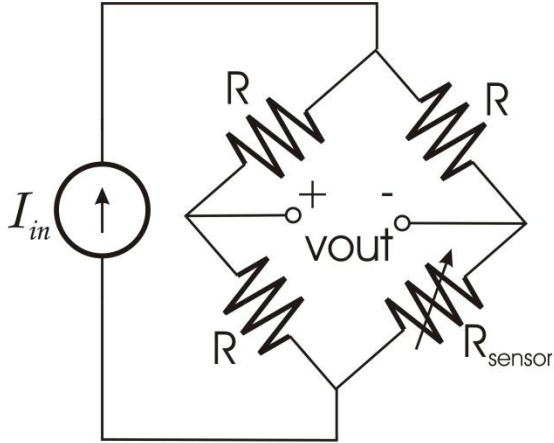| PROBLEM	POINTS	MAX
1		20
2		25
3		25
4		30

Problem 1 *Warm-up*

a) *(8 points)* Solve for v_{out}.

Solution:

b) *(12 points)* Solve for v_{out} for both circuits.
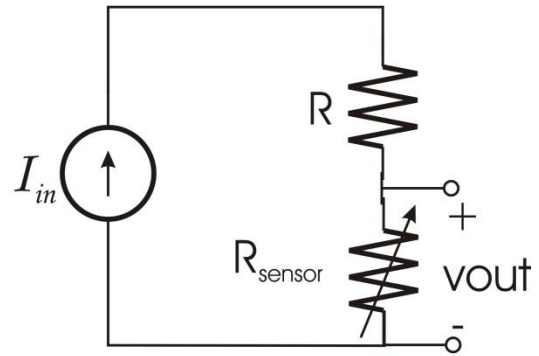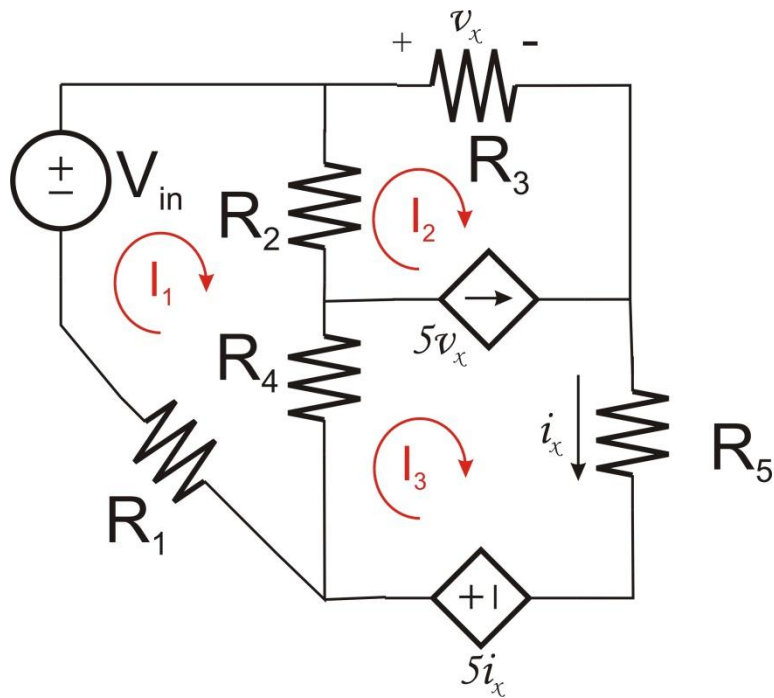

Solution A	Solution B

*"R2 says the chances of survival are 775 to one." -***C3PO**
*"Never tell me the odds." –***Han Solo**

Problem 2 *Mesh (25 points)*

Provide a solution to the circuit below USING MESH analysis. Use the mesh variables and directions provided below in red.

v_x

R_3

V_{in} R_2 I_2

I_1

$5v_x$

R_4

i_x R_5

I_3

R_1

$+I$

$5i_x$

In the box below, provide your answer in this form or lose points (if there are extra equations, just write them in as well):

_____*i1* + _____*i2* + _____*i3* = _____
_____*i1* + _____*i2* + _____*i3* = _____
_____*i1* + _____*i2* + _____*i3* = _____

Solution:

Problem 3 *Nodal (25 points)*

Provide a solution to the circuit below USING NODAL analysis. Use the node numbers and directions provided below in red.

In the box below, provide your answer in this form or lose points (if there are extra equations, just write them in as well):
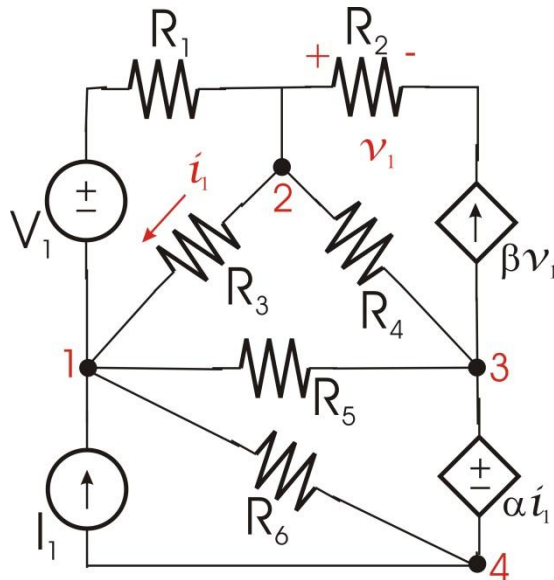
_____*v1* + _____*v2* + _____*v3* + _____*v4* = _____

_____*v1* + _____*v2* + _____*v3* + _____*v4* = _____

_____*v1* + _____*v2* + _____*v3* + _____*v4* = _____

_____*v1* + _____*v2* + _____*v3* + _____*v4* = _____

Solution:

Problem 4 *Wacky (30 points)*

Solve for v_{out}.

Solution: