

EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC
ENGINEERING

EENG223

CIRCUIT THEORY I

EXPERIMENT 6

PSPICE

Student Name & Student Number

1.....

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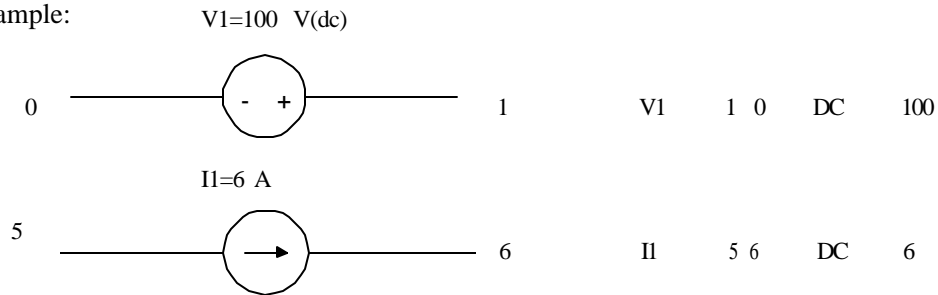
3.....

DATA STATEMENTS FOR DC ANALYSIS

- **Independent DC Sources**

Type of Element	Element Name	Node Connections	Type of source	Value
Independent voltage source	V _{xxx}	N1 N2	DC	Value of voltage source
Independent current source	I _{xxx}	N1 N2	DC	Value of current source

Example:



- **Dependent DC Sources**

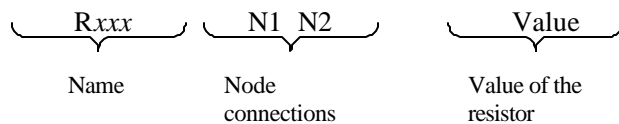
-- Voltage Controlled

Type of Element	Element Name	Node Connections	Controlling Nodes	Value
Voltage-controlled-voltage-source	E _{xxx}	N1 N2	CN1 CN2	Voltage Gain
Voltage-controlled-current-source	G _{xxx}	N1 N2	CN1 CN2	Transconductance

-- Current Controlled

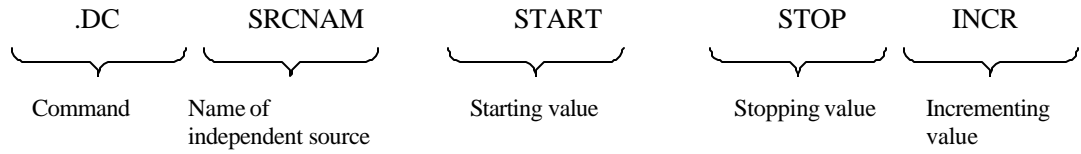
Type of Element	Element Name	Node Connections	Name of the zero-valued voltage source used to measure the controlling current	Value
Current-controlled-voltage-source	H _{xxx}	N1 N2	V _{xxx}	Transresistance
Current-controlled-current-source	F _{xxx}	N1 N2	V _{xxx}	Current Gain

- **Resistors**

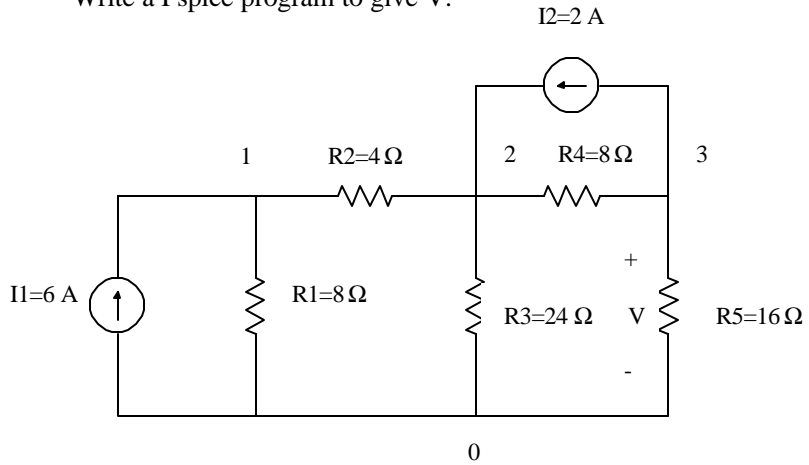


• **THE .DC CONTROL STATEMENT**

The .DC control statement allows you to increment an independent input source over a specified range of values. The format is:



Example 1: (Independent Sources)
Write a Pspice program to give V.



SOLUTION OF EXAMPLE 1

```

I1      0 1    DC    6
I2      3 2    DC    2
R1      1 0    8
R2      1 2    4
R3      2 0   24
R4      2 3    8
R5      3 0   16
.DC     I1     6 6    1
.PRINTDC      V(3,0)
.END

```

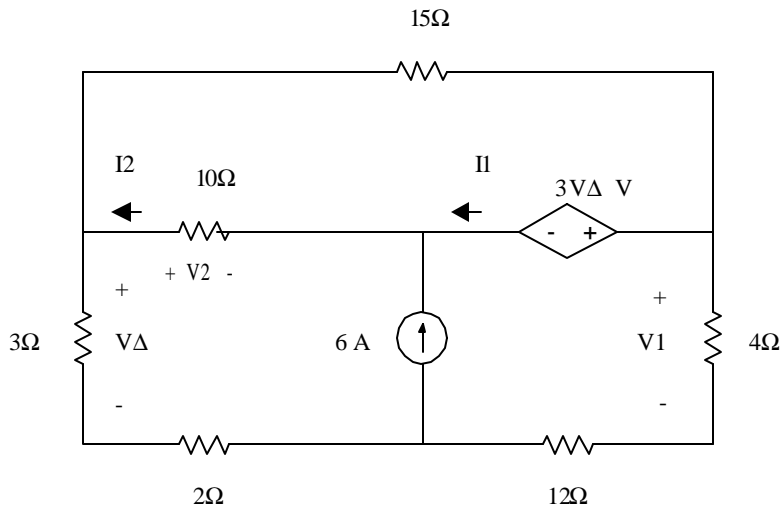
```

I1          V(3,0)
6.000E+00  8.000E+00

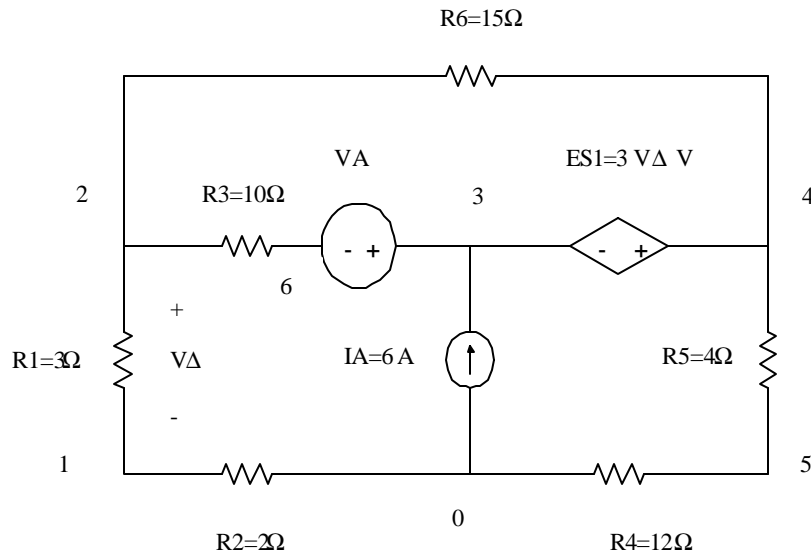
```

Example 2: (Voltage-controlled-voltage-source)

Write a Pspice program to have the values of V1, V2, I1 and I2.



The following circuit is redrawn for Pspice analysis.



SOLUTION OF EXAMPLE 2

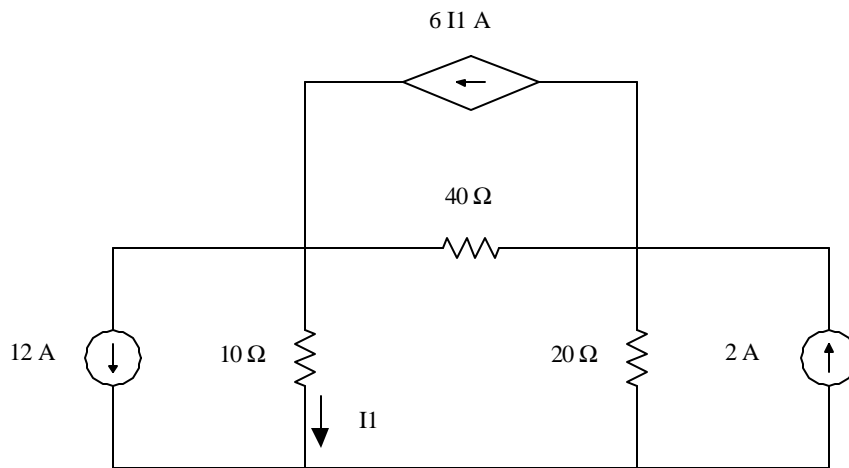
```

IA      0 3      DC      6
ES1     4 3      2 1      3
VA      3 6      DC      0
R1      2 1      3
R2      1 0      2
R3      2 6      10
R4      5 0      12
R5      4 5      4
R6      2 4      15
.DC     IA      6 6      1
.PRINT DC V(2,3) V(4,5) I(VA) I(ES1)
.END

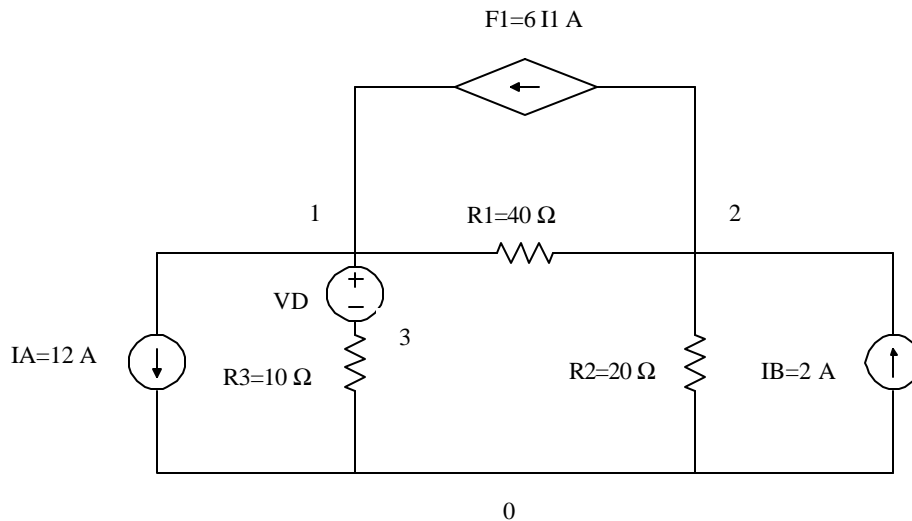
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IA	V(2,3)	V(4,5)	I(VA)	I(ES1)
6.000E+00	-7.11E+00	1.215E+01	7.111E-01	-5.289E+00

Example3:(Current-controlled-current-source)Write a pspice program to give value of I_1 .



The following circuit is redrawn for Pspice analysis.



SOLUTION OF EXAMPLE 3

```

IA      1 0    DC    12
IB      0 2    DC     2
F1      2 1    VD     6
VD      1 3    DC     0
R1      1 2    40
R2      2 0    20
R3      3 0    10
.DC     IA    12    12    1
.PRINT DC    I(VD)
.END

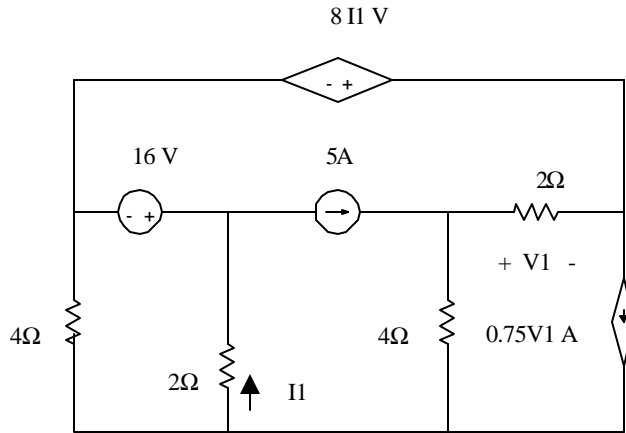
```

```

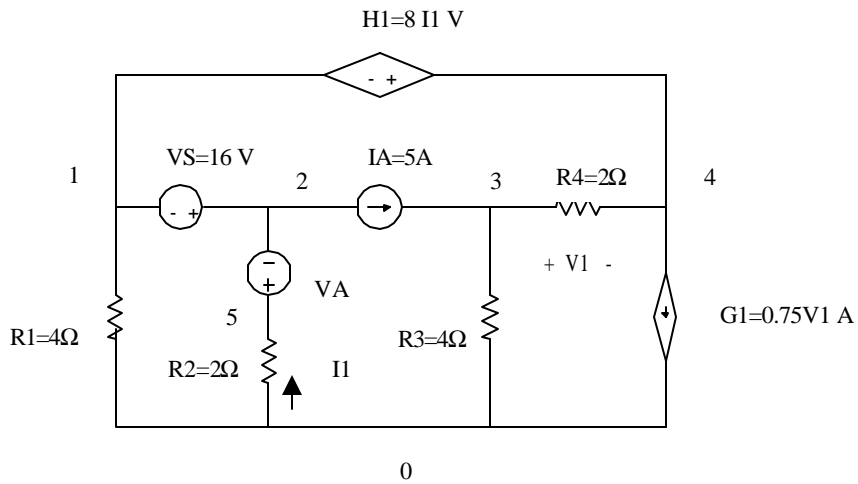
IA          I(VD)
1.200E+01  4.00E+00

```

Example 4: (Current-controlled-voltage-source, voltage-controlled-current-source)
Write a Pspice program to find V1.



The following circuit is redrawn for Pspice analysis.



```

SOLUTION OF EXAMPLE 4
VS      2 1   DC    16
IA      2 3   DC    5
H1      4 1   VA    8
VA      5 2   DC    0
G1      4 0   3 4   0.75
R1      1 0   4
R2      5 0   2
R3      3 0   4
R4      3 4   2
.DC     VS    16 16 1
.PRINT DC      V(3,4)
.END

```

```

VS      V(3,4)
1.600E+01 8.00E+00

```