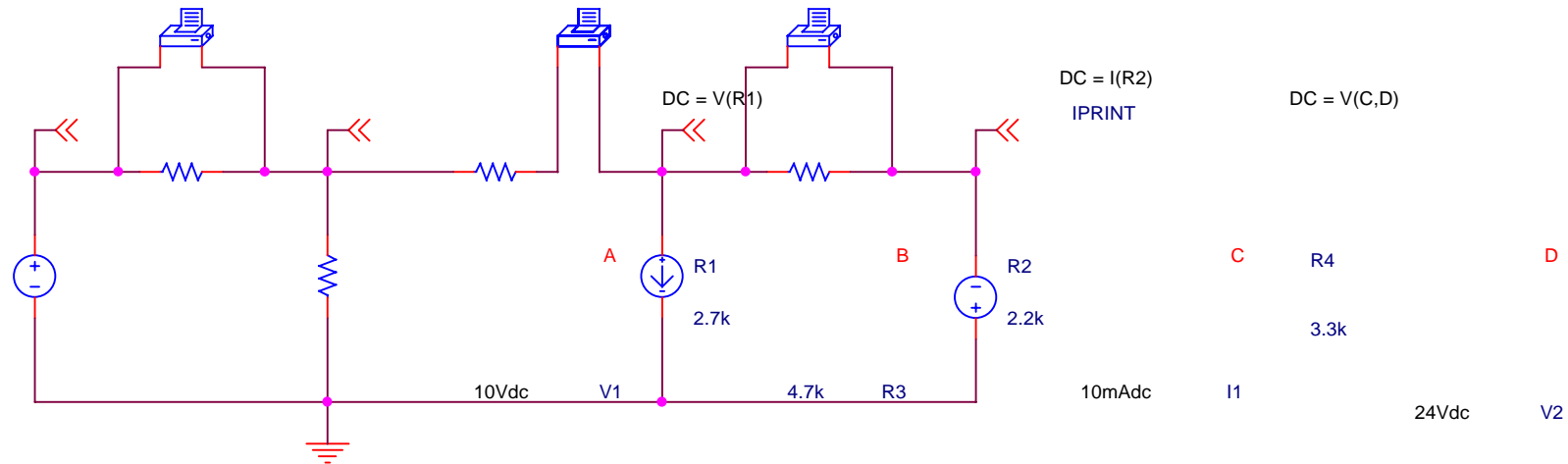EGR 260
Circuit Analysis
File: DCPrint.opj

DC Circuit - Using voltage and current printers

Purpose: Determine selected voltages and currents in the circuit shown below.

Analysis: Vary the voltage source V1 using a DC Sweep (from 10V to 10V).

DC = V(R1)

DC = I(R2)

IPRINT

DC = V(C,D)

A

B

C

D

R1

R2

R4

2.7k

2.2k

3.3k

10Vdc   V1   4.7k   R3   10mAdc   I1

24Vdc   V2

Notes concerning voltage and current printers:

1) Use the part IPRINT for a current printer and VPRINT2 for a voltage printer from the SPECIAL library.

2) Voltage printers must be placed across (in parallel with) a circuit element and current printers must be placed in series with a circuit element in order to measure the circuit element's voltage or current.

3) Pay attention to the polarity of the printers. Current flows from + to -. If you need to switch the polarity of a printer, right-click on it and pick Mirror Horizontally or Mirror Vertically.

4) Printers do not work with a simple bias analysis. You must perform a DC SWEEP (or later an AC SWEEP) for the printers to function. If no source needs to be varied, pick any independent source and vary it with same starting and stopping value (thus it is not really varied).

5) It is also necessary to set the DC property on each printer. Double-click on the printer to edit its properties and then right-click on the DC property and change its Display Format to Name and Value. Return to the schematic and double-click the DC= property that should now appear next to the printer and set its value.

6) When setting the DC property, it necessary to use a valid expression. Valid expressions should use component names or nodes. For example: V(R1), V(A), V(A,B), I(R2), etc. If V(R1) is used as in the example above, it will be changed to V(A,B) in the .OUT file. For this reason, it is helpful to label nodes using OFFPAGE symbols.

<Title>

A   <Doc>   <RevCode>

Monday, February 07Title   1   1

Size   Document Number

```
****  02/07 22:18:17 *********** Evaluation PSpice  *************

 ** circuit file for profile: DC Sweep

****      CIRCUIT DESCRIPTION

***************************************************************************

** WARNING: THIS AUTOMATICALLY GENERATED FILE MAY BE OVERWRITTEN BY SUBSEQUENT
PROFILES

*Libraries:
* Local Libraries :
* From [PSPICE NETLIST] section of pspiceev.ini file:
.lib nom.lib

*Analysis directives:
.DC LIN V_V1 10V 10V 1
.PROBE
.INC "dcprint-SCHEMATIC1.net"

**** INCLUDING dcprint-SCHEMATIC1.net ****
* source DCPRINT
V_V2          0 D DC 24Vdc AC 1Vac
R_R1          A B  2.7k
R_R2          B N00024  2.2k
R_R3          0 B  4.7k
R_R4          C D  3.3k

.PRINT        DC V([A],[B])
V_V1          A 0 DC 10Vdc AC 1Vac

.PRINT        DC V([C],[D])
I_I1          C 0 DC 10mAdc AC 1Aac
V_PRINT3        N00024 C 0V

.PRINT        DC I(V_PRINT3)


.END
```

```
**** 02/07 22:18:17 *********** Evaluation PSpice  **************

 ** circuit file for profile: DC Sweep

 ****     DC TRANSFER CURVES                TEMPERATURE =   27.000 DEG C

***************************************************************************

 V_V1        V(A,B)

  1.000E+01   1.871E+01       So V(A,B) = V(R1) = 18.71V

**** 02/07 22:18:17 *********** Evaluation PSpice  **************

 ** circuit file for profile: DC Sweep

 ****     DC TRANSFER CURVES                TEMPERATURE =   27.000 DEG C

***************************************************************************

 V_V1        V(C,D)

  1.000E+01  -4.024E+00       So V(C,D) = V(R4) = -4.024V

**** 02/07 22:18:17 *********** Evaluation PSpice  **************

 ** circuit file for profile: DC Sweep

****     DC TRANSFER CURVES                TEMPERATURE =   27.000 DEG C

***************************************************************************

 V_V1        I(V_PRINT3)

  1.000E+01   8.781E-03       So I(R2) = 8.781 mA

          JOB CONCLUDED

          TOTAL JOB TIME              .20
```

Simulation Settings - DC Sweep

General | Analysis | Include Files | Libraries | Stimulus | Options | Data Collection | Probe Window

Analysis type:
DC Sweep

Options:
- ☑ Primary Sweep
- ☐ Secondary Sweep
- ☐ Monte Carlo/Worst Case
- ☐ Parametric Sweep
- ☐ Temperature (Sweep)
- ☐ Save Bias Point
- ☐ Load Bias Point

Sweep variable
- ⦿ Voltage source
- ○ Current source
- ○ Global parameter
- ○ Model parameter
- ○ Temperature

Name: V1
Model type:
Model name:
Parameter name:

Sweep type
- ⦿ Linear
- ○ Logarithmic Decade
- ○ Value list

Start value: 10V
End value: 10V
Increment: 1

OK | Cancel | Apply | Help

OrCAD Capture - [DCPrint]

File Design Edit View Tools PSpice Accessories Reports Options Window Help

IPRINT

Analog or A/D Mixed Mode

File | Hierarchy

- Design Resources
  - .\dcprint.dsn
    - SCHEMATIC1
      - PAGE1
    - Design Cache
      - 0
      - IPRINT
      - ISRC
      - OFFPAGELEFT-L
      - R
      - TitleBlock0
      - VPRINT2
      - VSRC
  - Library
    - C:\PROGRAM FILES\ORCAD_DEMO\CAPTURE\LIBRARY\PSPICE\analog.olb
    - C:\PROGRAM FILES\ORCAD_DEMO\CAPTURE\LIBRARY\PSPICE\source.olb
    - C:\PROGRAM FILES\ORCAD_DEMO\CAPTURE\LIBRARY\PSPICE\sourcstm.olb
    - C:\PROGRAM FILES\ORCAD_DEMO\CAPTURE\LIBRARY\PSPICE\special.olb
  - Outputs
    - .\dcprint-schematic1.net
  - PSpice Resources
    - Include Files
    - Model Libraries
    - Simulation Profiles
      - SCHEMATIC1-DC Sweep
    - Stimulus Files

Start | OrCAD Capture - [DC... | DCPrint - Microsoft Word | Adobe Acrobat | 10:21 PM