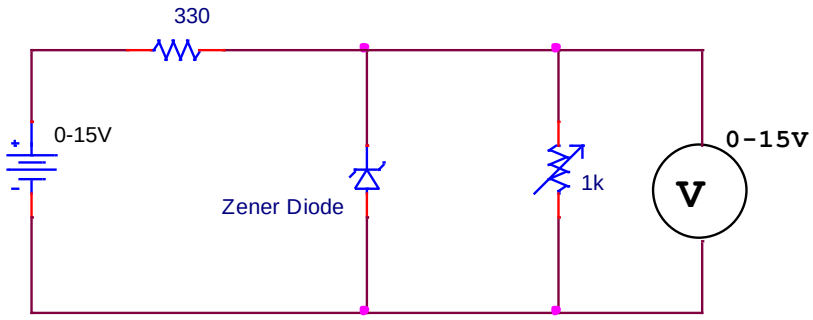
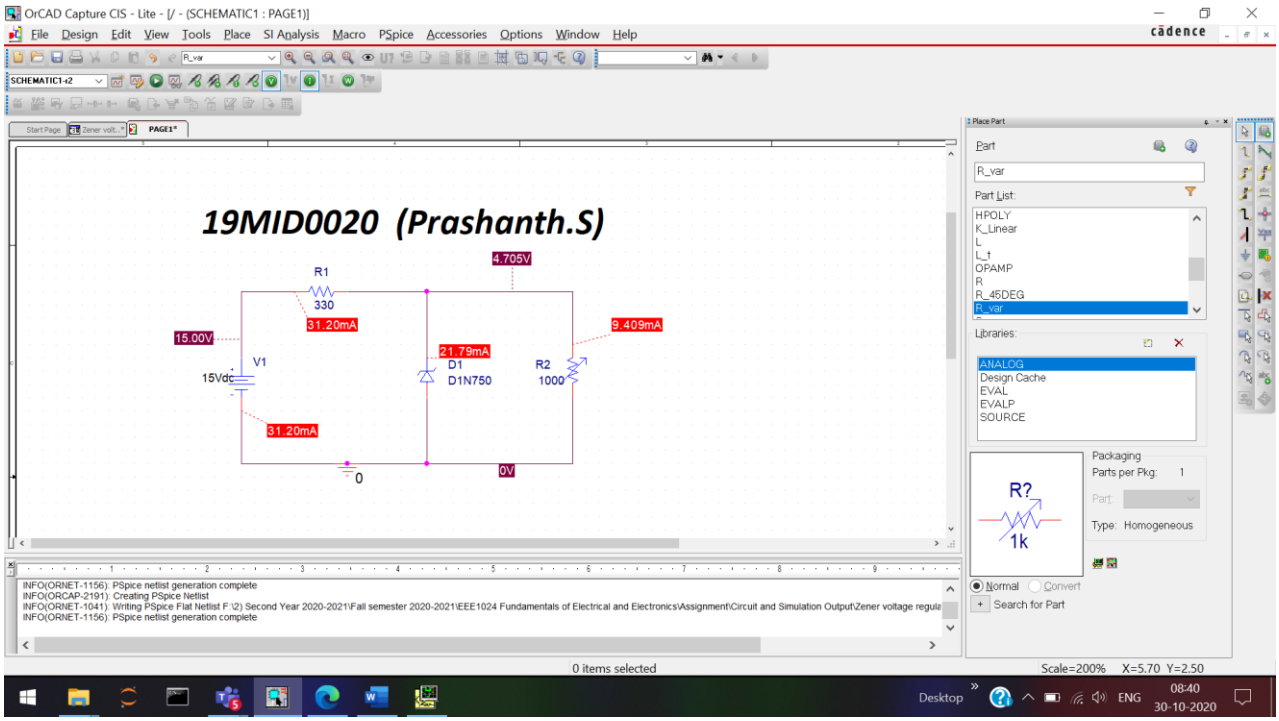
K. Load Regulation using Zener diode

Aim:
Calculate load regulation, record values and calculate the percentage load regulation of the zener diode

Apparatus Required: PSpice
ORCAD / Capture CIS

Circuit Diagram




OrCAD Capture CIS - Lite - [/ - (SCHEMATIC1 : PAGE1)]
File Design Edit View Tools Place SI Analysis Macro PSpice Accessories Options Window Help
cadence
19MID0020 (Prashanth.S)
R1
330
31.20mA
4.705V
15.00V
V1
15Vdc
21.79mA
D1
D1N750
R2
1000
9.409mA
31.20mA
0
0V
Part
R_var
Part List:
HPOLY
K_Linear
L
L_t
OPAMP
R
R_45DEG
R_var
Libraries:
ANALOG
Design Cache
EVAL
EVALP
SOURCE
Packaging
Parts per Pkg: 1
Type: Homogeneous
R?
1k
Normal
Convert
Search for Part
INFO(ORNET-1156): PSpice netlist generation complete
INFO(ORCAP-2191): Creating PSpice Netlist
INFO(ORNET-1041): Writing PSpice Flat Netlist F:\2) Second Year 2020-2021\Fall semester 2020-2021\EEE1024 Fundamentals of Electrical and Electronics\Assignment\Circuit and Simulation Output\Zener voltage regula
INFO(ORNET-1156): PSpice netlist generation complete
0 items selected
Scale=200% X=5.70 Y=2.50
Desktop
ENG
08:40
30-10-2020

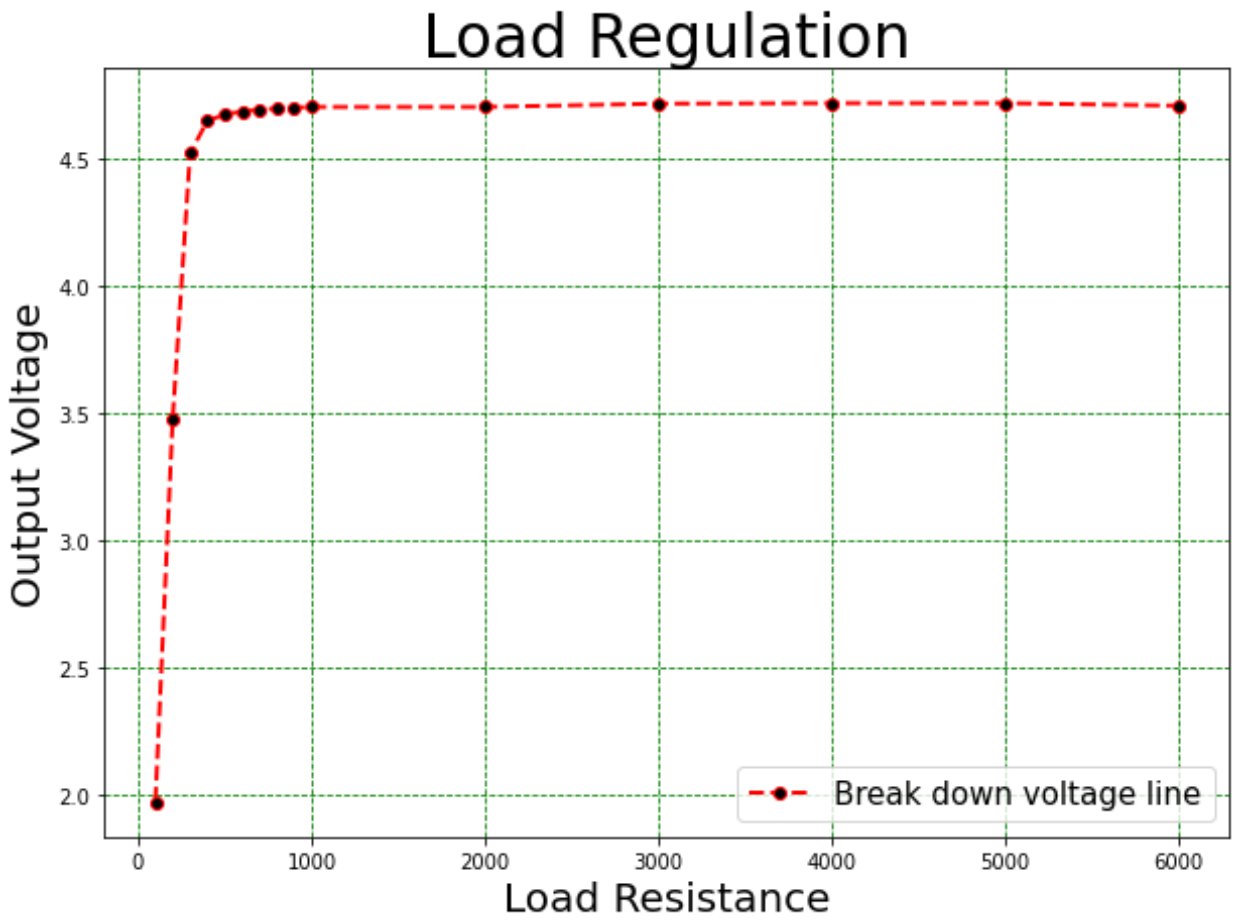
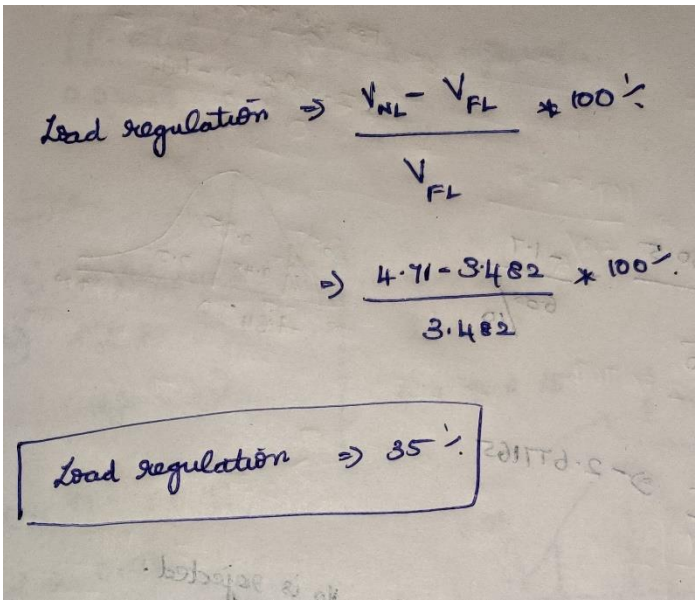

Load Regulation
Output Voltage
Load Resistance
4.5
4.0
3.5
3.0
2.5
2.0
0
1000
2000
3000
4000
5000
6000
Break down voltage line

Table (i) Load Regulation:

Sl.No	Load Resistance in ohms	Output DC Voltage (V_L) in Volts
1	100	1.974
2	200	3.482
3	300	4.523
4	400	4.651
5	500	4.675
6	600	4.687
7	700	4.694
8	800	4.699
9	900	4.702
10	1000	4.705
11	2000	4.705
12	3000	4.718
13	4000	4.720
14	5000	4.720
15	6000	4.71

Percentage Load Regulation



Result: The Voltage regulation application of Zener diode is understood and proved using OrCAD Pspice Software.

Inference: The **Zener diode**, with its accurate and specific reverse **breakdown voltage**, allows for a simple, inexpensive **voltage** regulator. Combined with the right resistor, fine control over both the **voltage** and the supply current can be attained.

Reg. No: 19MID0020	**Name:Prashanth.S**	**Date: 30.10.2020**