IARE

IARE
INSTITUTE OF AERONAUTICAL ENGINEERING
(An Autonomous Institute affiliated to JNTUH, Hyderabad)
Dundigal, Hyderabad - 500 043

LABORATORY WORK SHEET

Name of the Student : Abdul Basith Khan

Class : 1st Year (CSM-A) Semester : I st

Roll Number									
2	3	9	5	1	A	6	6	0	1

Course Code : AEED01 Course Name : EEE Laboratory

Name of the Course Faculty : Dr. L Rajashekhar Goud Faculty ID : IARE 11067

Exercise Number : 11 Week Number : 11 Date : 21/01/2024

DAY TO DAY EVALUATION:

Marks	Aim / Preparation	Algorithm / Procedure	Source Code	Program Execution	Viva - Voce	Total
		Performance in the Lab	Calculations and Graphs	Results and Error Analysis		
Max. Marks	4	4	4	4	4	20
Obtained	4	4	4	3	4	19

LR
Signature of Faculty

START WRITING FROM HERE :

Zener Diode as Voltage Regulator :-

$V_{in} = 15V$ $V_{NL} =$

R_L (Ω)	V_{FL} (Volts)	I_L (mA)	% Regulation
100	1.56	14.2	0.67
200	2.73	13	0.43
500	4.43	8.8	0.07
1K	4.67	4.7	0.02
2K	4.73	2.4	0.01
5K	4.77	1.0	0.5
10K	4.78	0.5	0.75
20K	4.78	0.2	0.90

ROLL NUMBER :

$R_L = 15\,k$

ϵ_s (Volts)	ϵ_{FL} (Volts)	I_L (mA)
1	1.10	0.1
2	1.97	0.1
4	3.62	0.2
6	4.31	0.3
8	4.53	0.3
10	4.64	0.3
12	4.71	0.3
14	4.76	0.3

Precautions:-

1. Ensure that the polarities of the power supply and the meters as per the circuit diagram.
2. Keep the input voltage Knob of the regulated power supply in minimum position both when switching ON or switching OFF
3. OFF the power supply.
4. No loose contacts at the junction.
5. Ensure that the ratings of the meters as per the circuit diagram for precision.

Calculations:-

Forward static resistance at 6 mA = $\frac{\epsilon_F}{I_F}$

Forward Dynamic resistance at 6 mA = $\frac{\Delta \epsilon_f}{\Delta I_f}$

Reverse static resistance at 6 mA = $\frac{\epsilon_F}{I_F}$

ROLL NUMBER :

Reverse Dynamic resistance at 6mA = $\Delta E_f / \Delta I_f$

Result :-

1. V-I Characteristics of zener diode are plotted and verified in both forward and backward directions.
2. Zener breakdown voltage for 4.7V
   Zener Diode = 4.7V
3. (i) Reverse Bias :-
   a) Static resistance at 6mA
   b) Dynamic resistance at 6mA

   (ii) Forward Bias :-
   a) Static resistance at 6mA
   b) Dynamic resistance at 6mA