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

LABORATORY WORK SHEET

Name of the Student: MADKI SAI CHARAN

Class: CSM-C Semester: I st

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

Course Code: AEE003 Course Name: Electrical and Electronics Engineering Laboratory.

Name of the Course Faculty: MS M VARALAKSHMI Faculty ID: IARE 11072.

Exercise Number: 10 Week Number: 10 Date: 06 January 2024

DAY TO DAY EVALUATION:

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

Signature of Faculty

START WRITING FROM HERE :

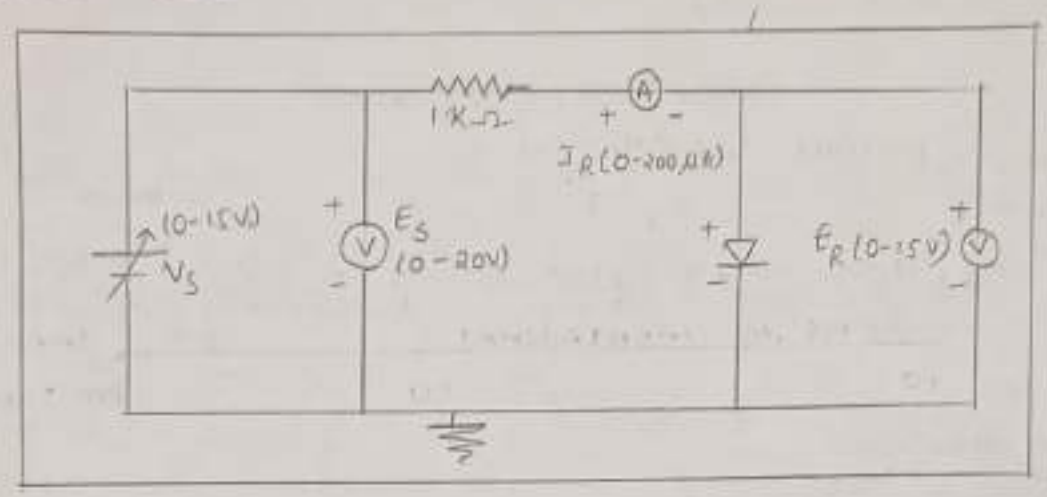
Aim : To plot the V-I characteristics of P-N junction diode in both forward and reverse directions, determine cut in voltage (Knee voltages), static and dynamic resistance in forward direction at forward direction current of 2mA and 8mA respectively and find static and dynamic resistance at 10V in revase bias condition.

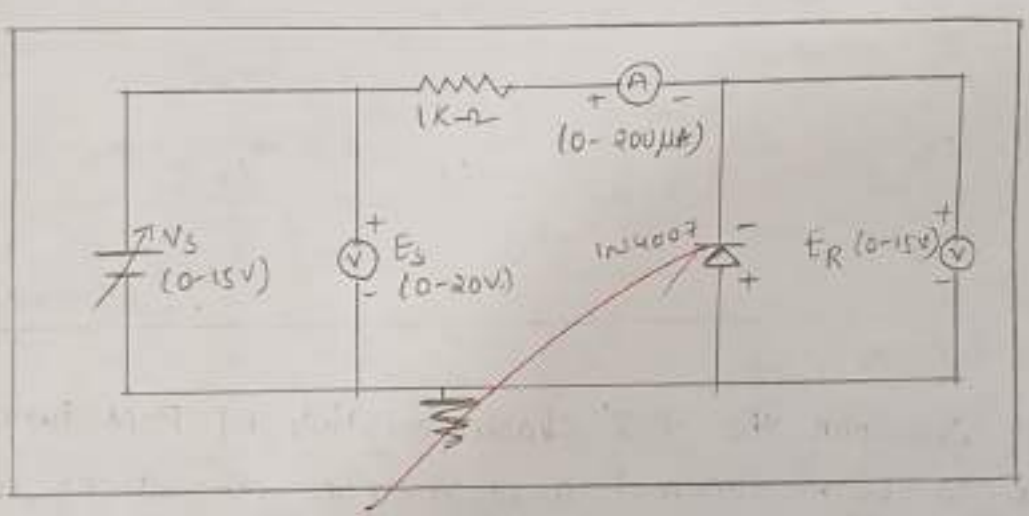
Apparatus :

S.NO	Device	Range / Rating	Quantity (in No's)
01.	Semiconductor Diode	(0-15V)	01
	trainer board containing	IN	01
	DC power Supply - Diode	4007	
	(Si) Diode (Ge) Carbon	OA79	01
	Film resistor	1K Ω 1/2 W	01.
02.	DC Voltmeter	(0-1V)	01
	DC voltmeter	(0-20V)	01
03.	DC Ammeter	(0-200 μA)	01
	DC Ammeter	(0-20 mA)	01
04.	Connecting Wires	5A	1/0

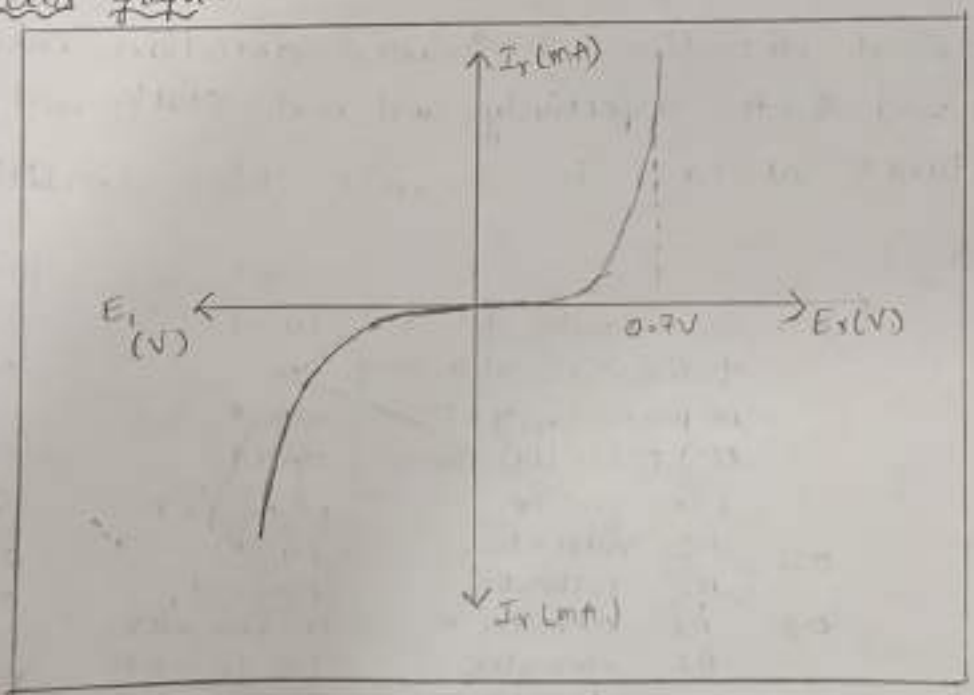
ROLL NUMBER: 23951A66F2

Circuit Diagram:





Expected graph:



ROLL NUMBER : 23951A66F2

Tabular Column:

Forward bias

E_s (V)	E_f (V)	I_f (mA)
0.1	0.23	0
0.5	0.48	0.1
0.8	0.54	0.4
0.9	0.54	0.5
1	0.55	0.6
2	0.60	1.5
4	0.75	3.5
6	0.95	5.5
8	1.11	7.6
10	1.75	9.7
12	2.32	11.7
14	2.71	13.2

Reverse bias

E_s (V)	E_r (V)	I_r (μA)
0.1	0.23	0
0.5	0.45	0.2
0.8	0.52	0.5
0.9	0.56	0.6
1	0.59	0.7
2	0.61	1.6
4	0.64	3.5
6	0.67	5.5
8	0.69	7.6
10	0.70	9.7
12	0.71	11.7
14	0.73	13.2

Calculations:

Forward bias:

Static Resistance at 8mA = E_f/I_f =

Static Resistance at 2mA = E_f/I_f =

Dynamic resistance at 8mA = $\Delta E_f/\Delta I_f$ =

Dynamic resistance at 2mA = $\Delta E_f/\Delta I_f$ =

Reverse bias:

Static Resistance at 10V = E_r/I_r =

Dynamic Resistance at 10V = $\Delta E_r/\Delta I_r$ =

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 the power supply.
3) No loose Contacts at the junctions.
4) Ensure that the ratings of the meters are as per the circuit design for precision.

Result: PN-junction is verified in both forward bias and reverse bias.