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OPEN CIRCUIT AND LOAD CHARACTERISTICS OF DC SHUNT GENERATOR

AIM:

To draw the open circuit and load characteristics of DC shunt generator.

APPARATUS REQUIRED:

Laptop with internet connection

THEORY:

DC generator converts mechanical energy into electrical energy.

DC generator works on the Principle of Faraday's Law. It states that "When a conductor cuts the magnetic flux and e.m.f is induced."

The field winding and armature windings are connected in parallel in the shunt generator.

Open circuit characteristics:-

It is also known as magnetisation characteristics or no load characteristics. It is a graph drawn between open circuit voltage (E_o) and field current (I_F).

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Load circuit characteristics

It is a graph drawn between load voltage (V_L) and load current (I_L). It is also known as external characteristics.

PROCEDURE:

Open circuit characteristics:-

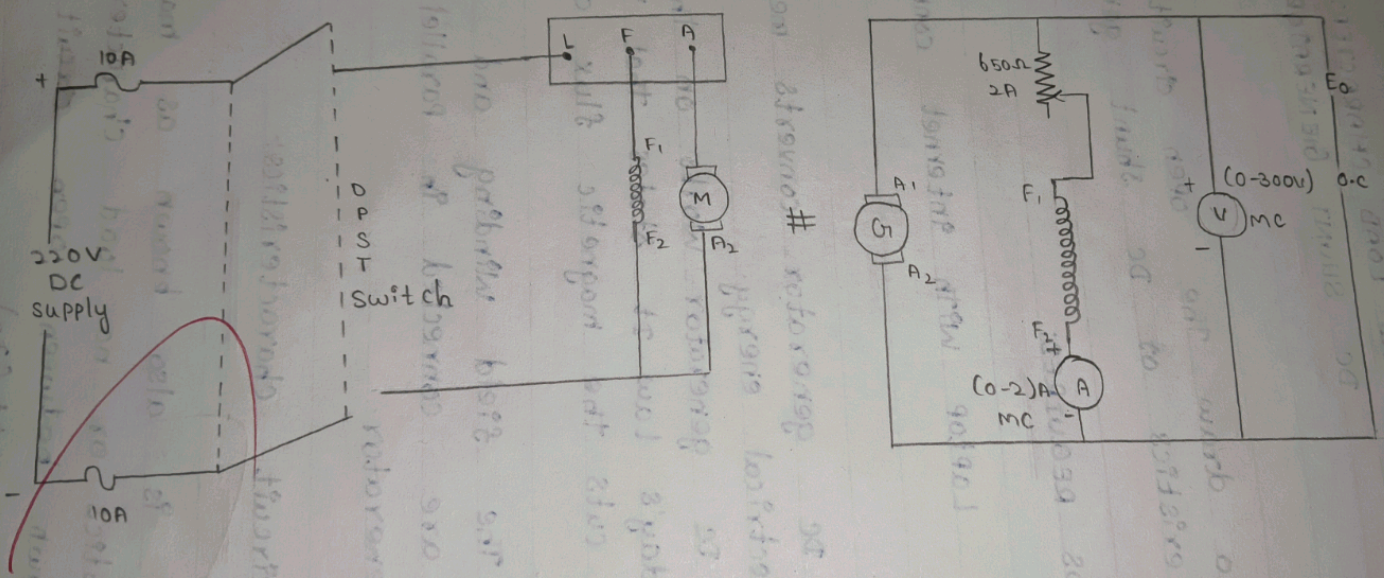
1. connections are made as per the circuit diagram.
2. switch on the supply and note down the readings (voltage and current)
3. By varying the field rheostat different values of open circuit voltage and field current are noted.
4. Plot the graph between open circuit voltage and field current.

Load characteristics:-

1. connections are made as per the circuit diagram.
2. switch on the supply and note the no load voltage and current.
3. By connecting different nodes, different values of load voltage and note current are noted.

OPEN CIRCUIT CHARACTERISTICS

CIRCUIT DIAGRAM:



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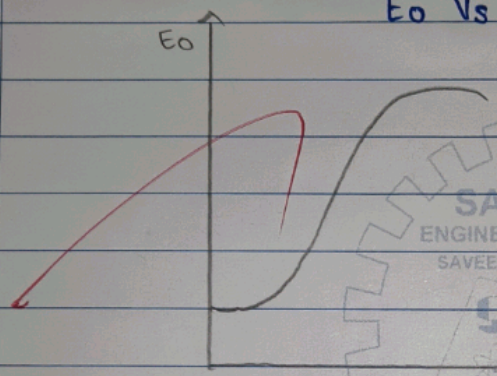
4. Plot the graph between load voltage and load current.

MODEL GRAPH

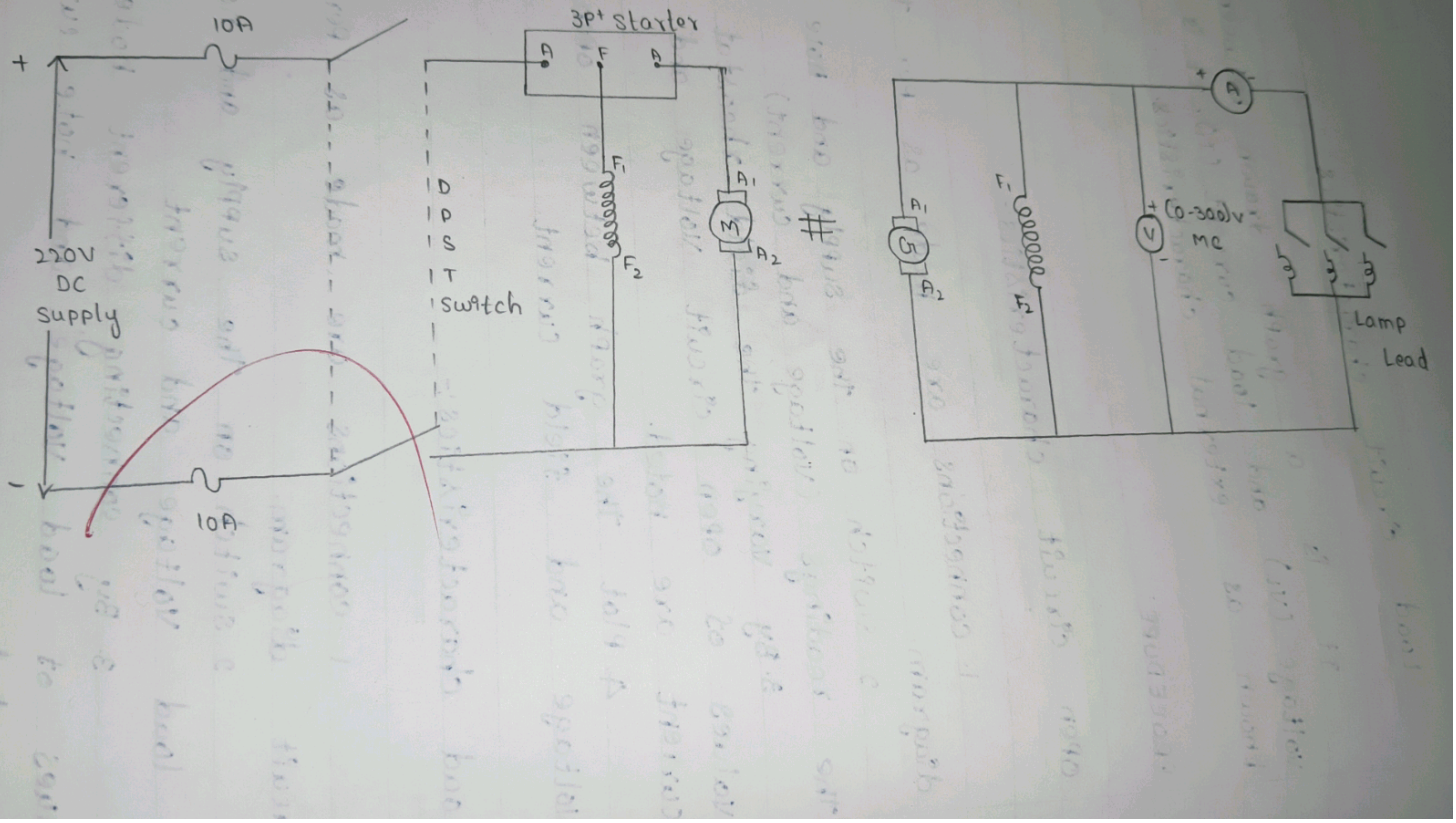
Open circuit characteristics

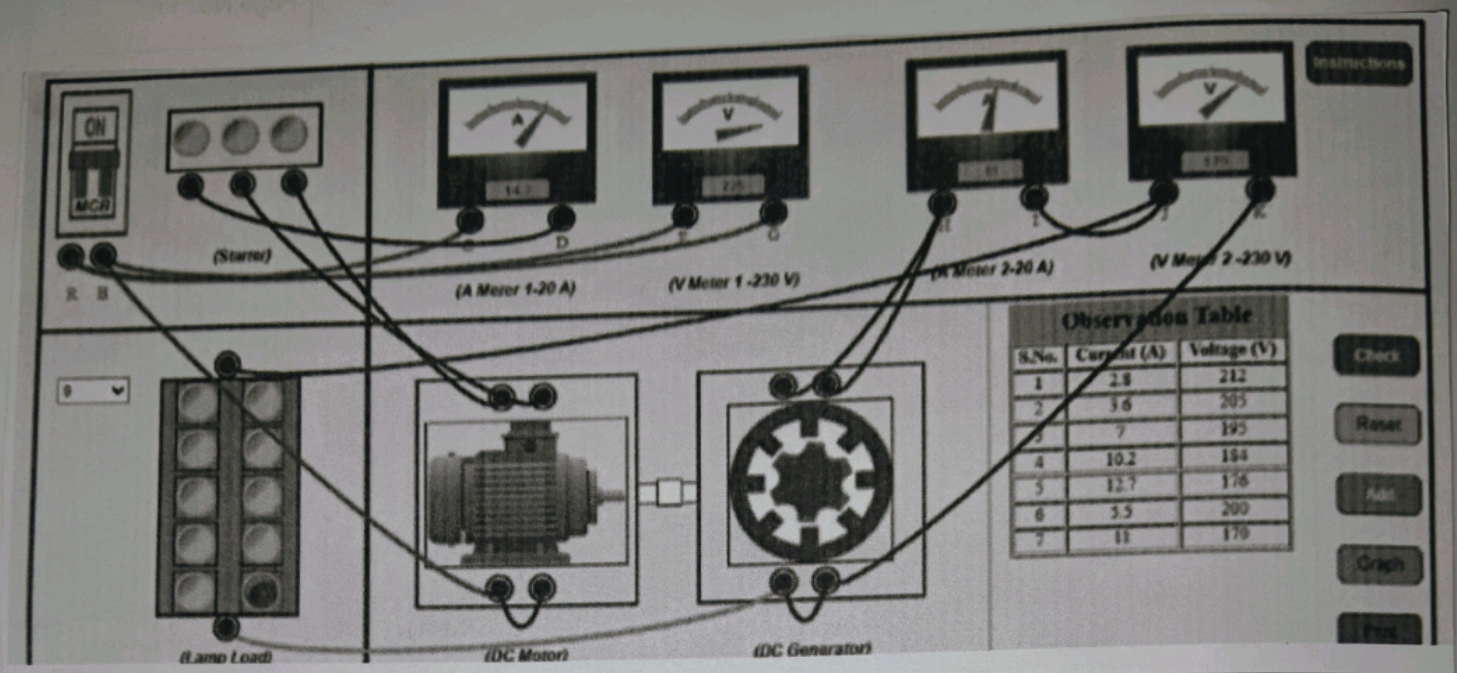
Eo Vs I_F

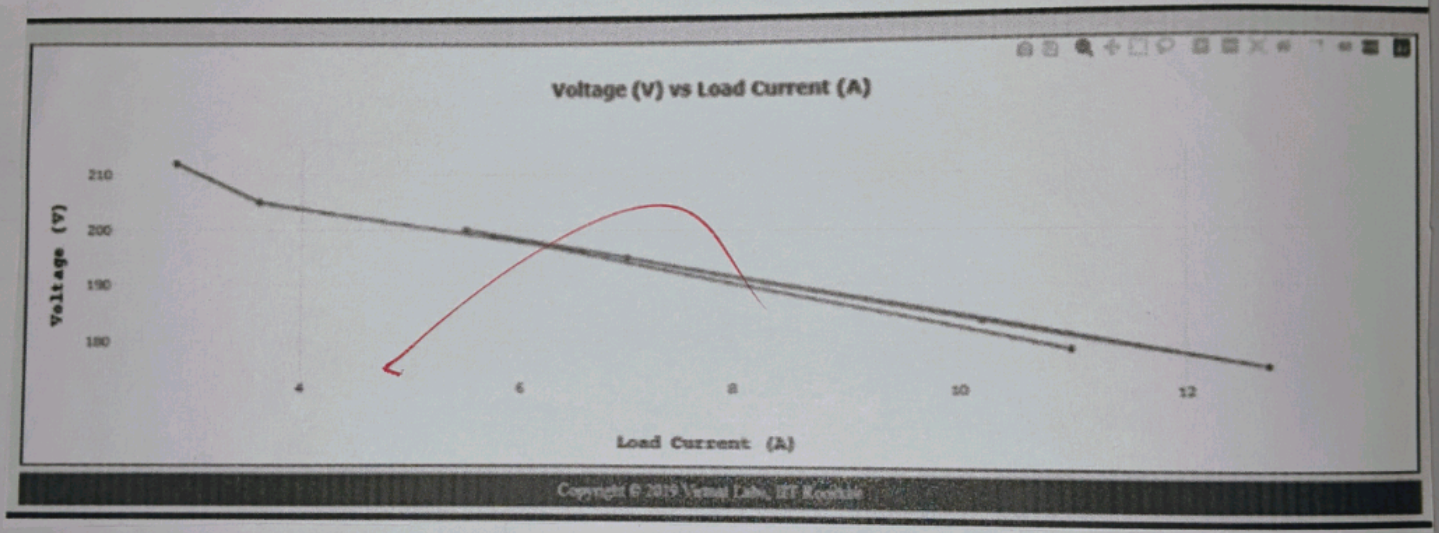


S.NO	VOLTAGE (V)	CURRENT (A)
1	115	0.16
2	120	0.18
3	126	0.20
4	129	0.21
5	133	0.23
6	135	0.24
7	138	0.28
8	142	0.30

LOAD CIRCUIT CHARACTERISTICS:-




ON
MCB
(Starter)
R B
A
V
C D E G
(A Meter 1-20 A)
(V Meter 1 -230 V)
(A Meter 2-20 A)
(V Meter 2 -230 V)
Instructions
Observation Table
S.No. | Current (A) | Voltage (V)
1 | 2.8 | 212
2 | 3.6 | 205
3 | 7 | 195
4 | 10.2 | 184
5 | 12.7 | 178
6 | 5.5 | 200
7 | 11 | 179
Check
Reset
Add
Graph
Print
(Lamp Load)
(DC Motor)
(DC Generator)


Voltage (V) vs Load Current (A)
Voltage (V)
210
200
190
180
4
6
8
10
12
Load Current (A)
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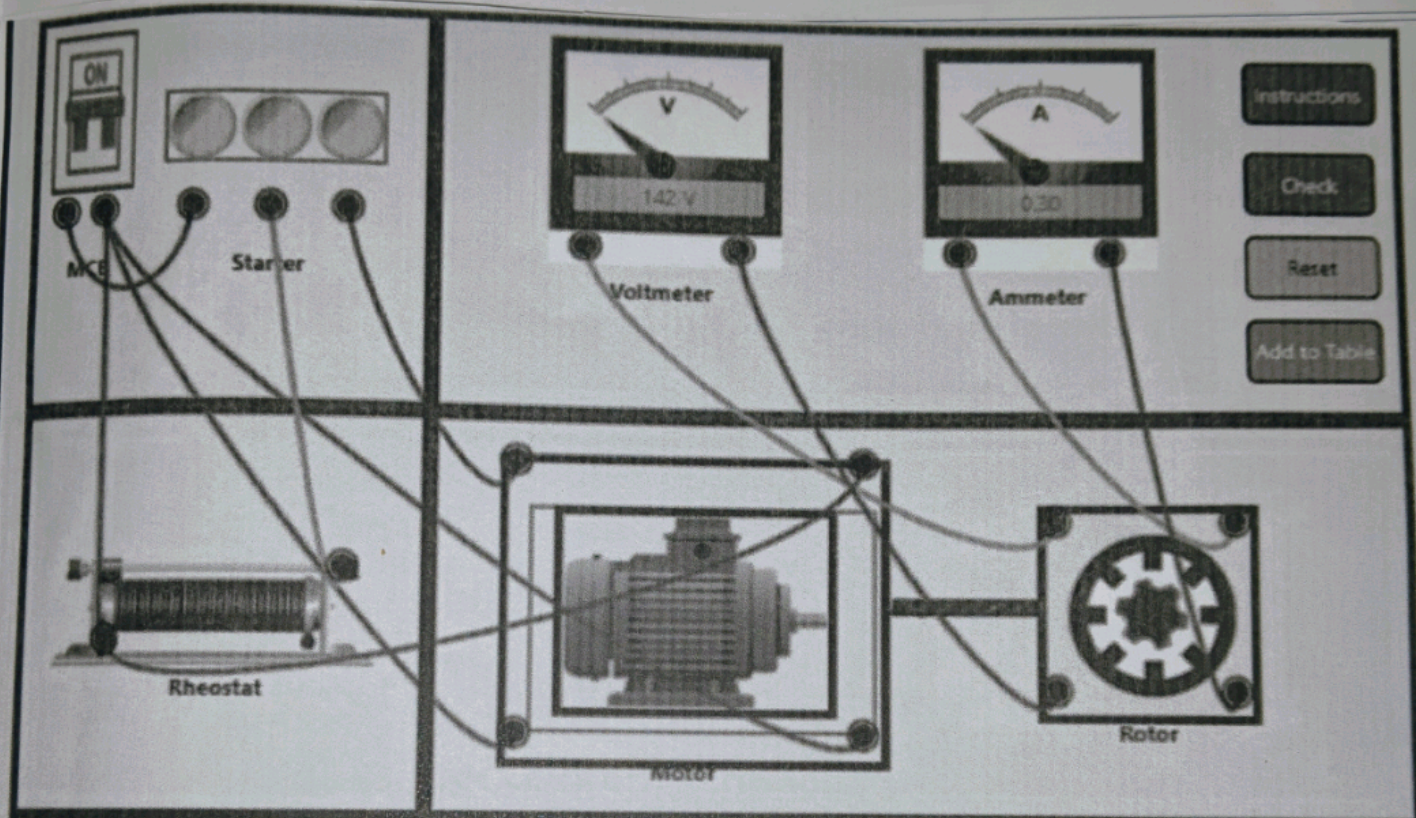
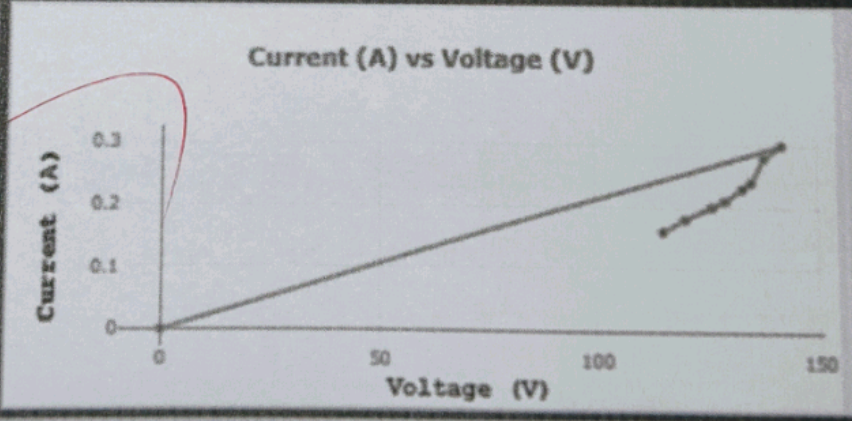


OBSERVATION TABLE

S.No.	Voltage (V)	Current (A)
1	115	0.16
2	120	0.18
3	126	0.20
4	129	0.21
5	133	0.23
6	135	0.24
7	138	0.28
8	142	0.30
9	0	0



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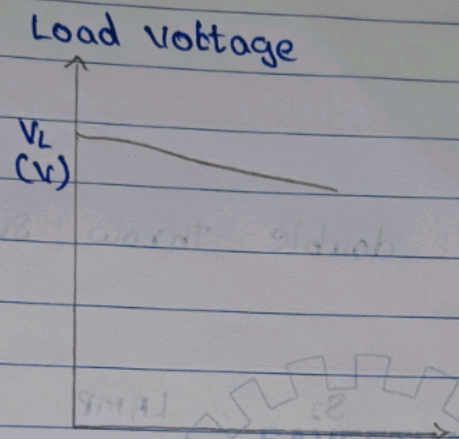
MODEL GRAPH

Load Characteristics



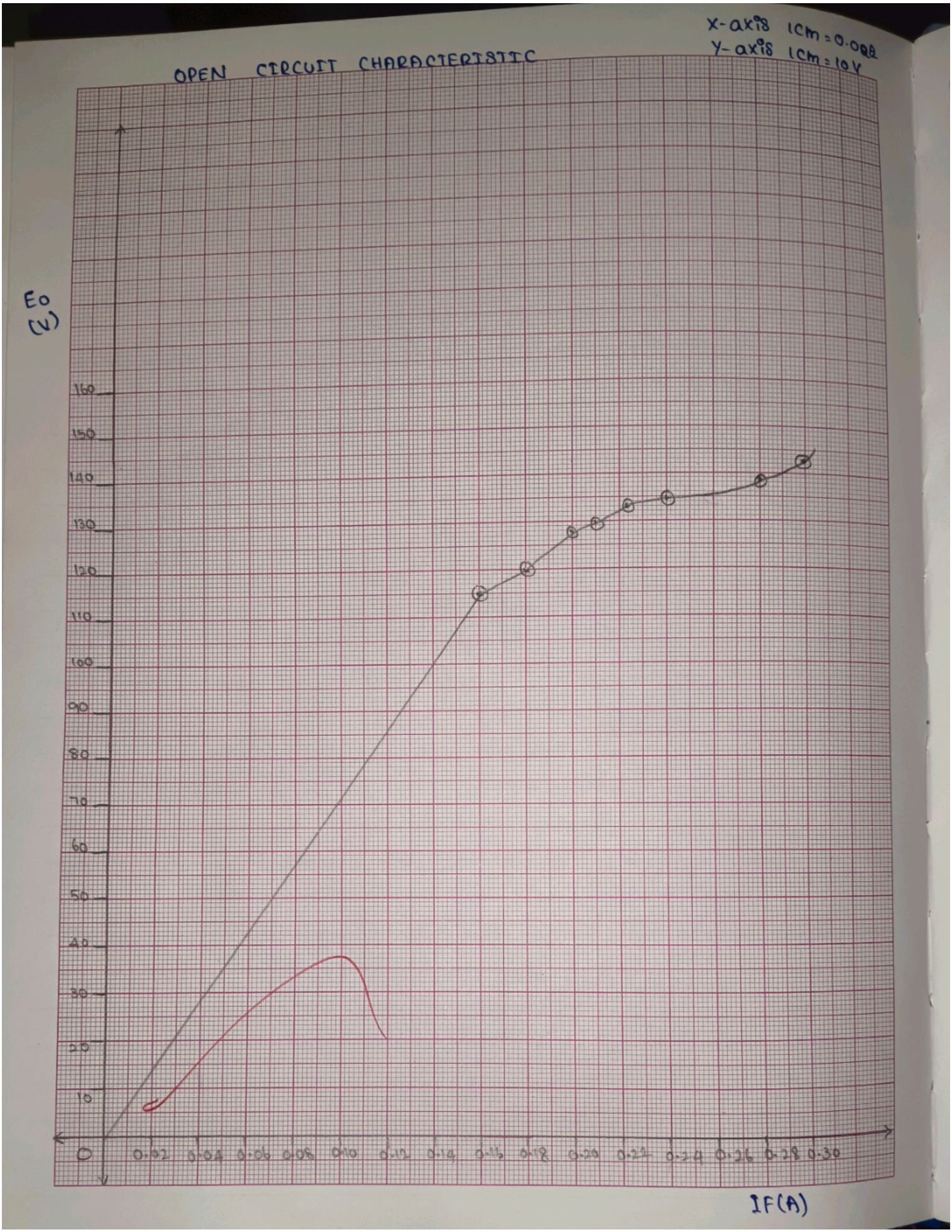
S.NO	CURRENT(A)	VOLTAGE (V)
1	1.2	220
2	2.8	212
3	3.2	208
4	3.6	205
5	5.5	200
6.	7	195

RESULT:

Thus the open circuit and load characteristics of DC shunt generator were verified successfully.

OPEN CIRCUIT CHARACTERISTIC

X-axis 1cm = 0.02A
Y-axis 1cm = 10V



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LOAD CHARACTERISTIC