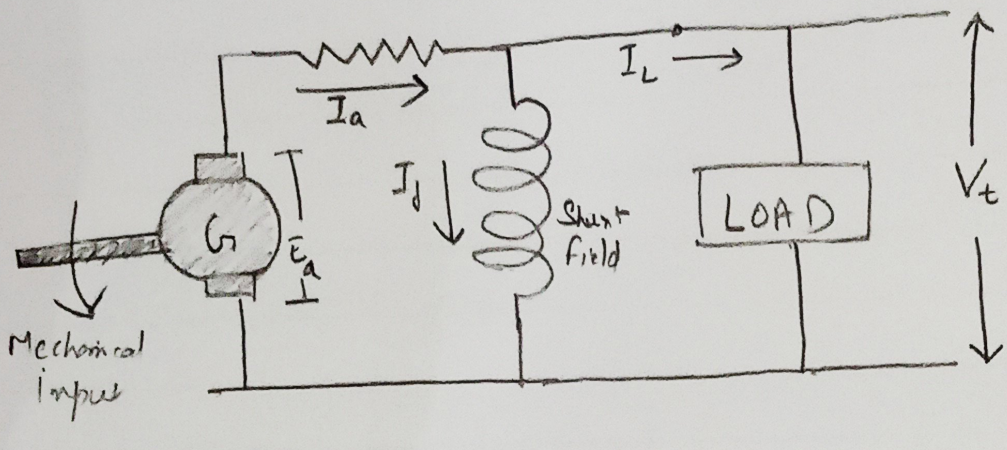
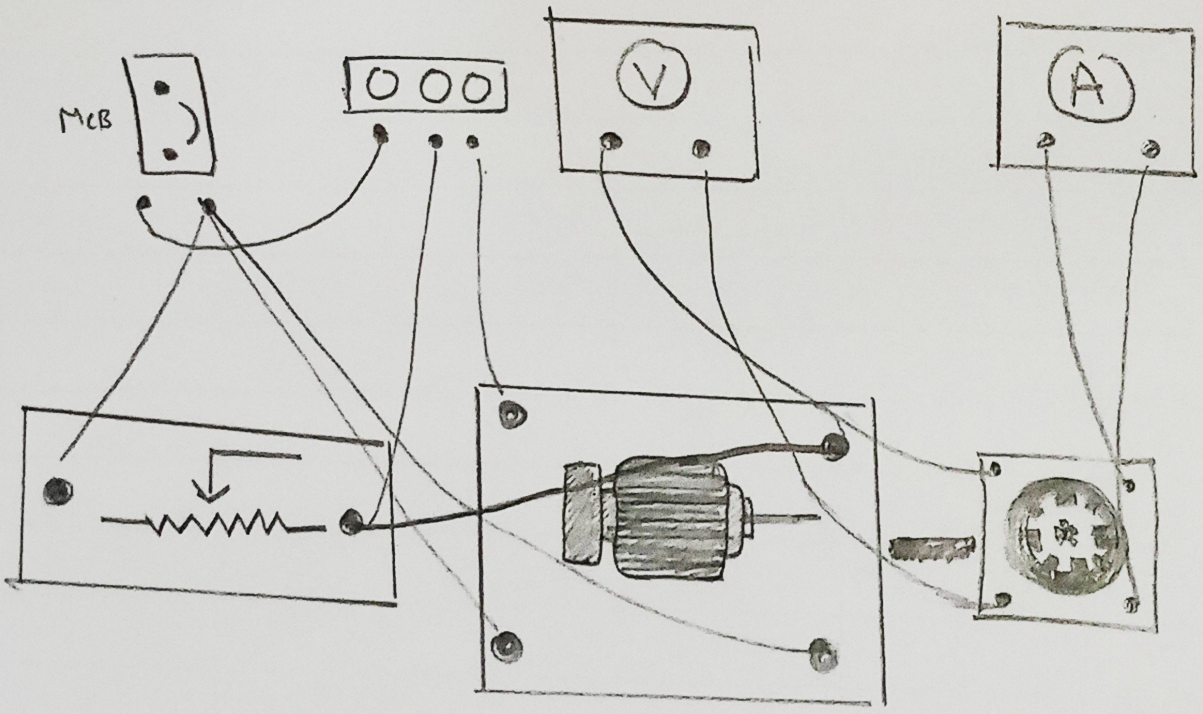

I_a
I_L
I_f
Shunt field
LOAD
V_t
E_a
G
Mechanical input


MCB
V
A

Experiment: 10

Date

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Aim: To study the magnetization characteristics of DC shunt generator. Draw the graph between the armature voltage & field current

Apparatus:

Rheostat	Motor
Voltmeter	Rotor
Ammeter	MCB

Theory:

DC shunt genator converts mechanical energy into electrical energy. It is self-exciting using induced EMF E_a to generate field current I_f. Which establishes the magnetic flux ϕ. The induced EMF is given by:

$$E = \frac{N P \phi Z}{60 A}$$

Where ϕ is flux, N is speed, Z is conductors, P is poles and A is parallel paths

Critical Field Resistance

Minimum resistance at which the generator fails to excite. It is found by plotting the OCC

Voltage (V)	Current (A)
0	0
115	0.16
120	0.18
126	0.20
129	0.21
133	0.23
135	0.24
138	0.28
142	0.30

Experiment :

Date

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curve and determining the tangent ~~of~~ slope from origin. Due to residual magnetism. A small EMF is generated even when $I_f = 0$

Initially EMF is proportional to ~~flux~~ Excitation current

At higher flux density, iron path reluctance increases

Residual magnetism initiates small EMF strengthening pole flux and stabilizing generation.

DELTA