

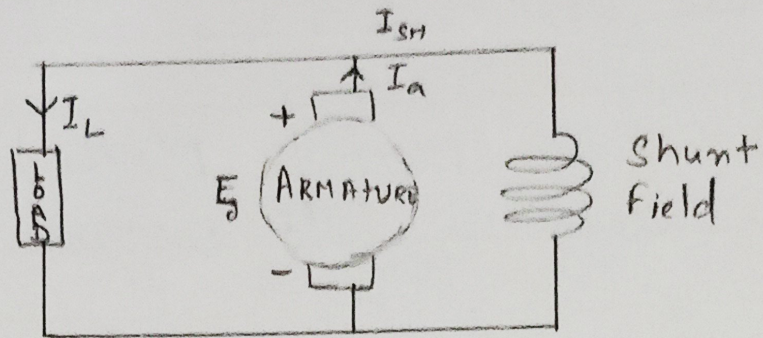
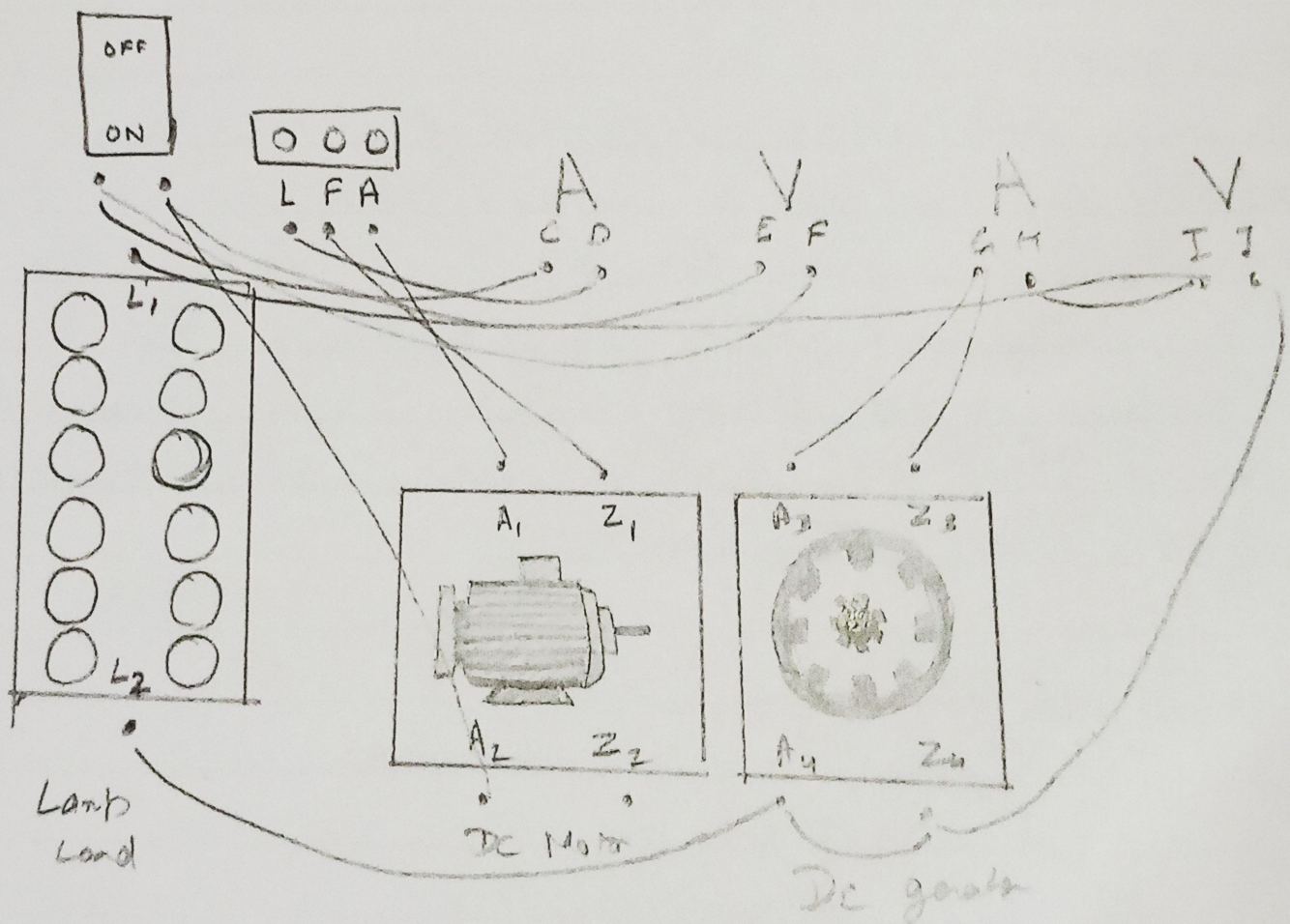


fig 1: Eq circuit of
DC shunt generator



Aim : To study the load characteristics of DC shunt generator. Draw the internal characteristics and external characteristics under diff loading conditions

Apparatus :

- DC motor
- DC generator
- Lamp load
- Ammeter
- Voltmeter
- Connecting wires

Theory :

A shunt generator has its field winding connected in parallel to the armature winding so the terminal voltage applies to it. The winding consists of many turns of the fine wire with high resistance. Only a small fraction of the armature current I_a flows through the field winding I_{sh} while I_L supplies the load.

Internal characteristics

This curve relates to the generated voltage E_g and load current I_L . Due to armature reaction. E_g decreases when the generator is loaded. The no-load voltage curve (AD) is

Current A	Voltage V
1.2	220
2.8	212
3.2	208
3.6	205
5.5	200
7	195
8.1	189
10.2	184
11	179
12.7	176

higher than the internal characteristics.

External on Load characteristics

This curve shows ~~that~~ how ~~max~~ terminal voltage varies with load current. Due to armature resistance, terminal voltage is lower than generated voltage.

$$V = E_g - (I_L + I_{sh}) R_a$$

As load ~~current~~ resistance decreases, load current inc up to a certain limit, after which further resistance reduction results in decline of current. Eventually, terminal voltage drops to zero, though residual magnetism may retain some voltage.