

**CIRCUIT DIAGRAM: OCC AND LOAD CHARACTERISTICS OF SEPERATELY EXCITED DC SHUNT GENERATOR**

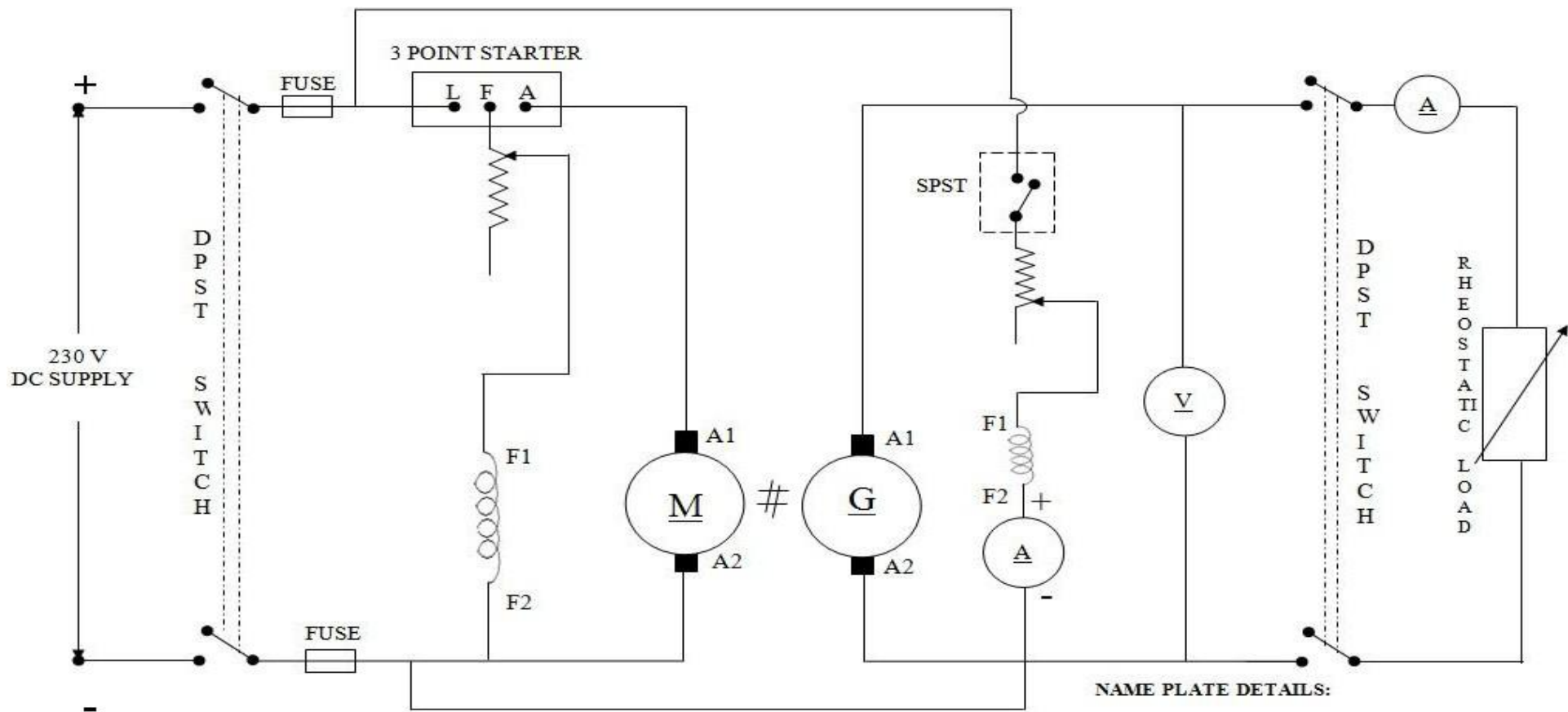


Figure 5.1 – OCC AND LOAD CHARACTERISTICS OF SEPERATELY EXCITED DC SHUNT GENERATOR

<b>Ex. No:</b>	<b>OCC AND LOAD CHARACTERISTICS OF SEPERATELY EXCITED DC GENERATOR</b>
<b>Date :</b>	

**AIM:**

To conduct a suitable experiment on the given dc generator and draw the OCC & load characteristics of the same when its field is separately excited.

**OBJECTIVES:**

1. To find the generated voltage ( $E_g$ ) of a separately excited DC generator for different field currents ( $I_f$ ) by open circuit test.
2. To find the armature resistance ( $R_a$ )
3. To determine Internal, External Characteristics of given DC generator by conducting load test.

**APPARATUS REQUIRED:**

S.NO	APPARATUS NAME	RANGE	TYPE	QUANTITY
1.	Ammeter			
2.	Voltmeter			
3.	Rheostat			
4.	Tachometer			
5.	DPST switch			
6.	SPST switch			
7.	Loading Rheostat			

**FORMULA:**

$$E_g = V_L + I_a R_a \quad \text{Volts}$$

Where  $E_g$  – Generated emf (V)

$V_L$  – Load Voltage (V)

$I_a$  – armature current (A)

$R_a$  – Armature resistance in ohms = 1.5 (given).

Table 5.1 OPEN CIRCUIT CHARACTERISTICS TEST OF  
DC SHUNT GENRATOR

S.NO	FIELD CURRENT $I_f$ (A)	GENERATED VOLTAGE ( $E_g$ ) (Volts)

Table 5.2 LOAD TEST ON DC SHUNT GENERATOR

Armature Resistance  $R_a = 1.5$  ohm

S.NO	FIELD CURRENT $I_f$ (A)	LOAD CURRENT $I_L$ (A)	LOAD VOLTAGE $V_L$ (Volts)	$I_a = I_L$ (A)	$E_g = V_L + I_a R_a$ (Volts)

**PRECAUTION:**

1. The motor field rheostat should be kept at minimum position at the time of starting.
2. The generator field rheostat should be kept at maximum position at the time of starting.
3. DPST switch 2 is kept open during OCC test.
4. SPST switch is opened at starting to note the residual voltage.

**PROCEDURE:****OCC TEST:**

1. By closing DPST switch 1 & using 3 point starter the motor is started.
2. The motor field rheostat is adjusted and the rated speed is set.
3. The residual voltage is noted down from the voltmeter & SPST switch is closed.
4. The generator field rheostat is varied and the generated voltage ( $E_g$ ) & corresponding field current ( $I_f$ ) are noted.
5. The same procedure is repeated up to the rated voltage.

**LOAD TEST:**

1. The DPST switch 2 is closed when the rated voltage is reached.
2. Then the load is applied using loading rheostat and the load current ( $I_L$ ), load voltage ( $V_L$ ) & field current ( $I_f$ ) are noted down for various load current.
3. The same procedure is repeated up to the rated current

**MODEL GRAPH:**

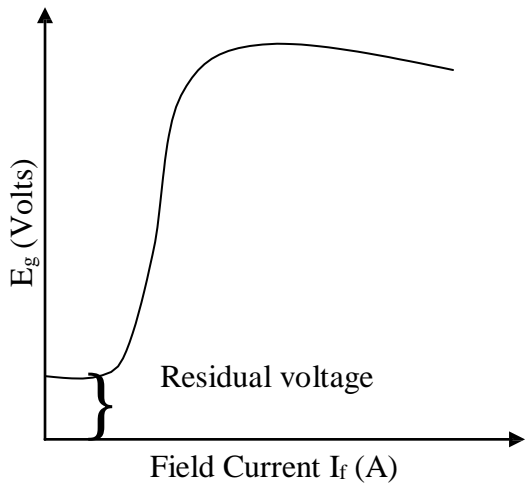
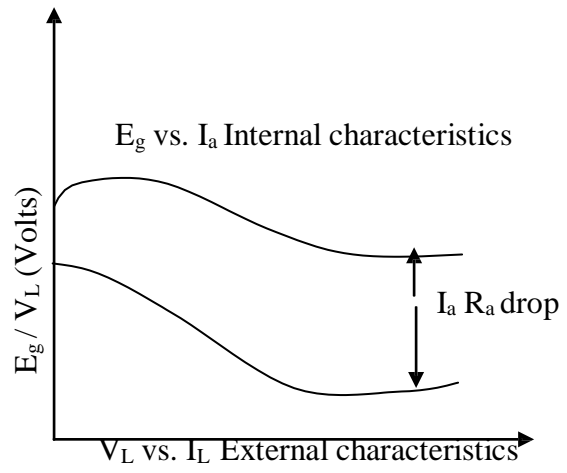


Figure 5.2 OCC Characteristics



Current  $I_L / I_a$  in A

Figure 5.3 Load Characteristics

**MODEL CALCULATION:**