



***THE HASHMITE UNIVERSITY
ELECTRICAL ENGINEERING DEPARTMENT
ELECTRICAL MACHINES LAP***

Lab Sheet

Separately Excited DC-Generator.

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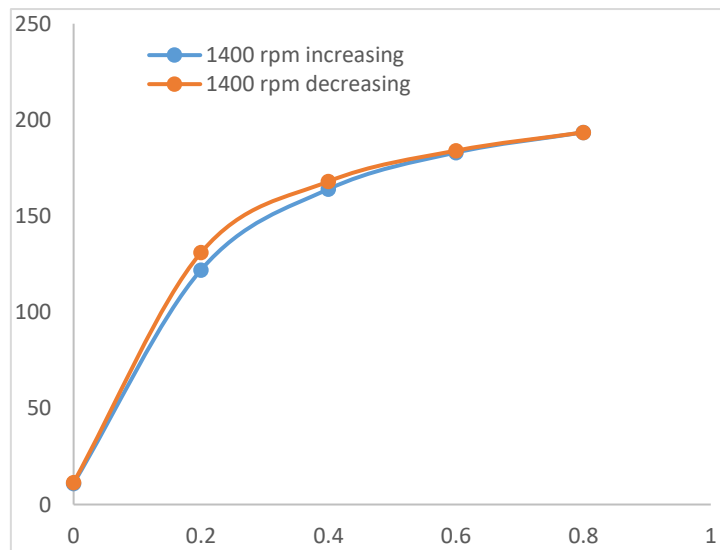
DC-Separately Excited Generator

The no-load characteristic

Table (6-7)

1400rpm			
Increasing		Decreasing	
E_A (V)	I_F (A)	E_A (V)	I_F (A)
11	0	11.5	0
122	0.2	131	0.2
164	0.4	168	0.4
183	0.6	184	0.6
193.5	0.8	193.5	0.8

1. Draw the no load characteristic for increasing and decreasing I_F on (x) axis at 1400 on the same graph?



2. Why does the no load characteristic differ for increasing and decreasing excitation current?

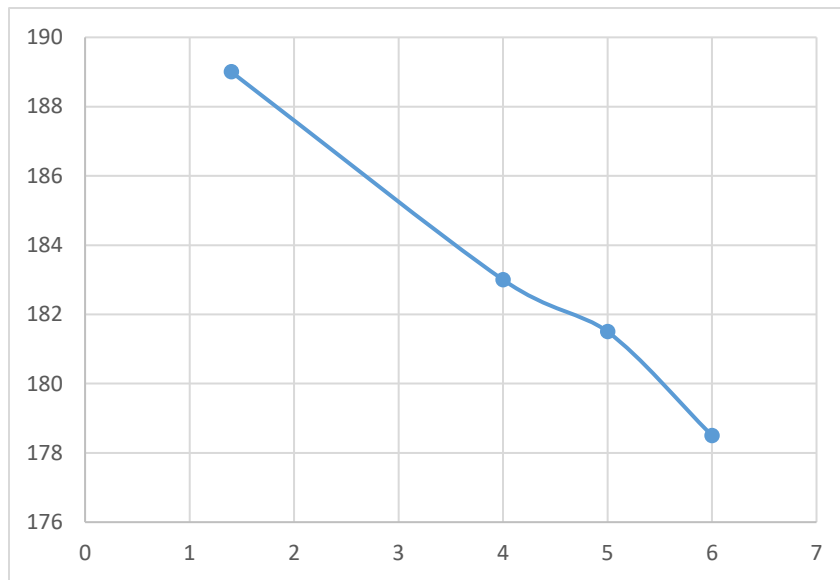
Because of the Hysteresis loss occurred in the armature current (I_a) of the DC machine

The load characteristic

Table (6-9)

I_F (A)	N(rpm)	I_A (A)	V_T (V)
0.8	1400	1.4	189
0.8	1400	4	183
0.8	1400	5	181.5
0.8	1400	6	178.5

1. Draw the external voltage characteristic with I_A on (x) axis?



2. Why does V_T increase with decrease I_A ?

Because of the drop voltage over the internal resistance of the armature current will decrease, so (V_t) will increase since $V_t = E_a - I_a \cdot R_a$ and (E_a is constant)

Conclusions:

1. In a separately-excited dc generator, the terminal voltage can be controlled by changing the internal generated voltage of the machine.
2. When the load supplied by the generator is increased, I_L (and therefore I_A) increases.
3. The DC voltage is obtained from this generator by means of "commutation."

