NATIONAL INSTITUTE OF TECHNOLOGY, DURGAPUR

DEPARTMENT OF ELECTRICAL ENGINEERING

Electrical Machines Laboratory

WARD-LEONARD METHOD OF SPEED CONTROL OF D.C MOTOR

Object: To control the speed of a d.c. motor in either direct den of rotation by Ward-Leonard Method.

Set under test:

Procedure: Make usual connection for the motor of the supply sot. Connect the generator field to a separate d.c. Source through a D.P.D.T. switch and ammeter & a variable resistance and the armature terminals to the armature terminals of the motor under test through switch fuse. Connect a centre-zero voltmeter across the generator terminals. Connect the motor field to a d.c. source through a variable resistance.
Run the supply set at rated speed. Keep the generator field excitation off. With maxm. excitation in the motor field. Switch on the test motor switch. Put the generator field on. Increase the excitation to get rated terminal voltage at rated terminal voltage at rated speed. Adjust the excitation of the motor so that rated speed is obtained at rated terminal voltage. Decrease the generator field excitation in 4/5 steps to zero, reverse and increase till the motor runs at rated speed in the opposite direction.

See that the motor field current remains constant during the test. The generator field currentshould not be retraced while taking readings for increasing or decreasing field currents.

Results:

No. of Obs.	Generator field exciting current	Generator terminal voltage (+) or (-)	Speed of the motor	Direction of rotation	Remarks

REPORT: 1) Draw curves of speed Vs. Generator Exciting current and comment on the result.
2) State the advantages and disadvantages of speed control by this method.

Reference: Electro-Technology – H. Cotton.

Precaution: 1) Motor field circuit switch should never be opened during the test.
2) All fuse ratings must be carefully calculated and approved by the teacher.