

# **Faculty of Electrical Engineering**

## **MSc ELECTRICAL POWER ENGINEERING**

Module: Special Topics

:Assignment

### **Speed Controller Design**

Value: 40% of Module

Assignment Tutor(s): Dr Ramtin  
Sadeghi

## Requirements .1

Write a report including diagrams, • contents, references etc. You can use technical publications, books or any other usual library resources, but you *must not make verbatim extracts from these*. Sources of information should be acknowledged and appropriately .referenced in your report

## Tasks .2

### *Design and simulation of a DC Drive 2.1*

A DC Machine is connected to 5 n. m load supplies by four quadrant DC chopper. The switching frequency is 5 kHz an DC-Link voltage is 300 v. motor :parameters are as follows

:Armature parameters

$R_a=1 \Omega$ ,  $L_a=100 \mu\text{H}$ , rated current= 100 A, rated voltage= 350 v

:Field parameters

$R_a=1 \Omega$ ,  $L_a=10 \text{ mH}$ , rated current= 100 A, rated voltage= 350 v

Inertia:  $0.05 \text{ kg/n.m}^2$ , Rated speed= 1500 RPM

Develop and simulate a closed-loop speed controller in PSIM software. The voltage control method is used. Plot the reference speed, rotor speed, armature current and voltage