Guidelines for the Assignments Reports

The report should contain the following:

1. The program code used to calculate the requirements.
2. The output values (figures) required with proper heading and axes titles.
3. Comments on the outputs.

The report should be sent by email to **tamer.m.abdo@gmail.com** as a **pdf file**. The file name should be as follows: **studentname_assig1.pdf**

A six-pole, 50 Hz cylindrical rotor synchronous machine has rotor winding with a total of 138 series turns and a distribution factor = 0.935. The air-gap length is 3.15 cm. Write a computer program to draw the air gab magneto-motive force and flux density distributions for the above machine for a field current of 10 A (up-to the 15th harmonic).

Write a computer program to analyze the performance of a three-phase induction motor operating at its rated frequency and voltage. The inputs should be the rated motor voltage, power and frequency, the number of poles, the equivalent-circuit parameters, and the rotational loss. The program should plot the motor supply current, the output power, the input power and power factor and the motor efficiency against a range of slip staring from s=1 to s=0. Also plot the same parameters against the motor speed.

Exercise your program on a 500-kW, 4160 V, three-phase, 60-Hz, four-pole induction motor whose rated speed rotational loss is 3.5 kW and whose equivalent-circuit parameters are:

R_1 =0.521 R_2=1.32 X_1 =4.98 X_2=5.32 X_m= 136