THE HASHMITE UNIVERSITY
ELECTRICAL ENGINEERING DEPARTMENT
ELECTRICAL MACHINES LAP

Lab Sheet

Induction Motor I.

Group number:	Students ID:
Moslem Naji Nayef Othman	1733045

Induction Motor-I

1- Resistance Measurement

By using ohmmeter measure the three winding resistances between:

$U_1, U_2 = 8.141$ $V_1, V_2 = 8.101$ $W_1, W_2 = 8.100$ $R_1 = \dfrac{R_U + R_V + R_W}{3} = 8.114$

2- No Load Test

Table (8.2)

MEASURED VALUES			CALCULATED VALUES				
$V_{(v)}$	$I_{1\,(A)}$	$P_{in\,(w)}$	$\cos\theta$	θ	Z_m	R_c	X_m
220	2.62	150	0.149	81.43	145.41	961.479	147.07

$$\cos\theta = \frac{P_{in}}{\sqrt{3}V_T I_{ln}}, \quad R_c = \left(\frac{Z_m}{\cos\theta}\right) - R_1, \quad X_m = \frac{Z_m}{\sin\theta}$$
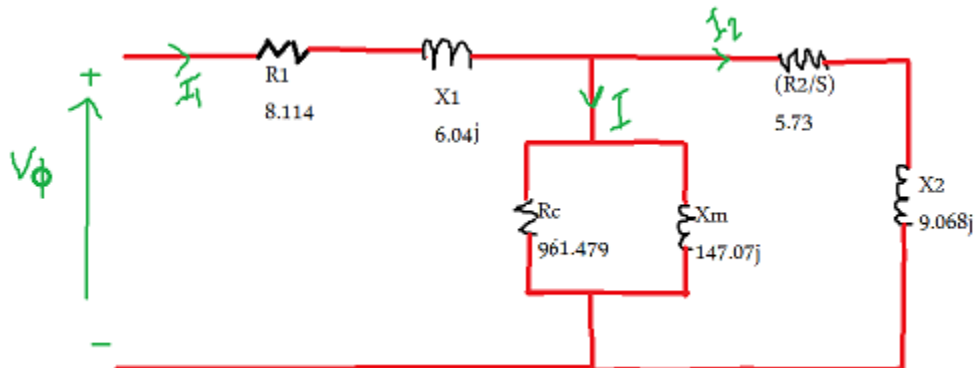
3- Locked Rotor Test

Table (8.3)

"Δ" Rated current ( )A			CALCULATED VALUES				
I1 (A)	V(v)	Pin(W)	θ	Z_{LR}	R_2	X_1	X_2
4.8	56	310	47.5	20.51	5.73	6.04	9.068

$$\cos\theta = \frac{P_{in}}{\sqrt{3}V_T I_{ln}}, \quad R_2 = \cos\theta \times Z_{LR} - R_1, \quad X_{LR} = \sin\theta \times Z_{LR}$$

Questions:

1. Draw the Label the circuit parameters and the values obtained in the lab.

2. What information do you get from no load and locked rotor tests on an induction motor?

   From Locked rotor test we can find the rotor parameters (R2 , x2) and stator reactance, and from No-load Test we can get magnetizing reactance and combined friction, core and windage power losses.

Conclusions:
1) From the lab we learned how to do the connection for the induction motor.
2) In no load test, when motor runs for some times and bearings get lubricated fully, at that time readings of applied voltage, input current and input power are taken.
3) The air gap in magnetizing branch in an induction motor slowly increases the exciting current and the no load stator I^2R loss can be recognized.
4) The locked rotor test is performed under the normal operating conditions when the rotor current and the frequency are on the same conditions.