FACULTY OF INFORMATICS

B. E. 2/4 (IT) I Semester (OLD) Examination, July 2012

Subject: **Electrical Engineering**

Time: 3 Hours Max. Marks: 75

Note: Answer all questions from Part-A. Answer any *Five* questions from Part-B.

PART – A (25 Marks)

1.	State and explain the Kirchhoff's current law.	3
2.	Define the average and RMS value of sinusoidal ac quantities.	2
3.	List out the advantages of autotransformers.	3
4.	List out the advantages of three phase systems.	2
5.	Classify the DC machines.	2
6.	Explain why do we use a starter to start the DC motor.	3
7.	Compare the cage and would rotors.	2
8.	What is meant by slip in an induction motor? Why must slip be present for motor action?	3
9.	Explain the principle of operation of a three phase alternator.	3
10.	Explain the basic principle of operation of a single phase motor.	2

PART – B (50 Marks)

11.(a)	State and explain the Thevenin's thecrem and Norton theorem with suitable examples.	5
(b)	Derive the expression for the energy stored in an inductance and capacitance.	5
12.(a)	Explain the working principle of single phase energy meter with necessary diagrams.	5
(b)	Explain OC and SC tests of single phase transformer with neat diagrams.	5
13.(a)	Derive the e.m.f equation of D.C. generator.	4
(b)	Discuss the different methods of speed control of d.c motor.	6
14.(a)	Explain the control of speed of a three phase induction motor by (i) Stator voltage method (ii) Rotor resistance method	
(b)	A 4-pole, three phase induction motor operates from a supply whose frequency is 50 Hz. Calculate (a) the speed at which the magnetic field of the stator is rotating; (b) the speed of the rotor when the slip is 0.04; (c) the frequency of the rotor current when the slop is 0.03; (d) the frequency of the rotor current at standstill.	4
15.(a)	What is meant by armature reaction in an alternator? Explain.	4
(b)	With neat diagrams explain the regulation of three phase alternator by synchronous impedance method.	6
16.(a)	Explain the principle of operation of a single phase capacitor start and capacitor run motor with neat diagrams.	6
(b)	Derive the torque equation for DC motor.	4
17.	Write short notes on the following:	10