COLLEGE OF ENGINEERING & TECHNOLOGY

Department : **Electrical and Control Engineering**

Lecturer : **STAFF**

Course : **Electrical Power & Machines** **Marks: 40**

Course Code : **EE 328** **Start time: 11:30**

Date : **27/5/2015** **Time : 2 hour**

Final Examination paper

Answer the following questions:

1.a) Discuss the conditions of voltage building up in: (i) separately-excited dc generator, and (ii) shunt dc generator. (2 Marks)

1.b) The flux per pole in an eight-pole, wave-wound, 1200 rpm dc generator is 0.05 Wb. The armature has 24 coils with 10 turns per coil, with a total armature circuit resistance of 0.4 Ω. Calculate the induced electro motive force (E). If the 1800 V, calculate the armature current. (6 Marks)

2.a) Draw the Power Flow Diagram of DC motor. (2 Marks)

2.b) A dc series motor has 0.1 Ω and 0.05 Ω armature and field resistances respectively. When the supply was 300V and the motor current was 80A, the speed was 360 rpm. What resistance should be inserted in series to reduce the speed to 270 rpm without affecting motor torque at the same supply voltage? (6 Marks)

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3) A 100 kW, 220/110 step down transformer has the following parameters: R1 = 0.02 Ω, X1 = 0.03 Ω, R_2'= 0.02 Ω, X_2'= 0.032 Ω, Rc = 250 Ω, Xc = 125 Ω. If the transformer is supplying full load at unity power factor and nominal secondary voltage, find the primary voltage and current. Use the approximate equivalent circuit. (8 Marks)

4.a) Discuss the three-light bulb method for synchronizing two generators or a generator with the main grid system. (2 Marks)

Members of course Examination Committee:	Signature of Members of course Examination Committee:	Date:
Lecturers: Prof. Ahmed Refaat		18 /5/2015
Course Coordinator: Dr Ahmed Kadry		18 /5/2015
Head of Department: Prof. Hamdy Ashour		18 /5/2015