Uva Wellassa University, Sri Lanka
End Semester Examination – August 2010
SCT 161-1 Basic Electricity & Electronics

Time: One (01) hour

Total 03 Questions
Answer All questions.

1) a. What is the Superposition theorem?

b. A storage battery X has an e.m.f. of 6V and an internal resistance of 2Ω. Another battery Y has an e.m.f. of 4V and an internal resistance of 2Ω. The two batteries are connected in parallel across a resistance of 10Ω as in Fig Q1. By using the Superposition theorem determine the current in each branch of the network.

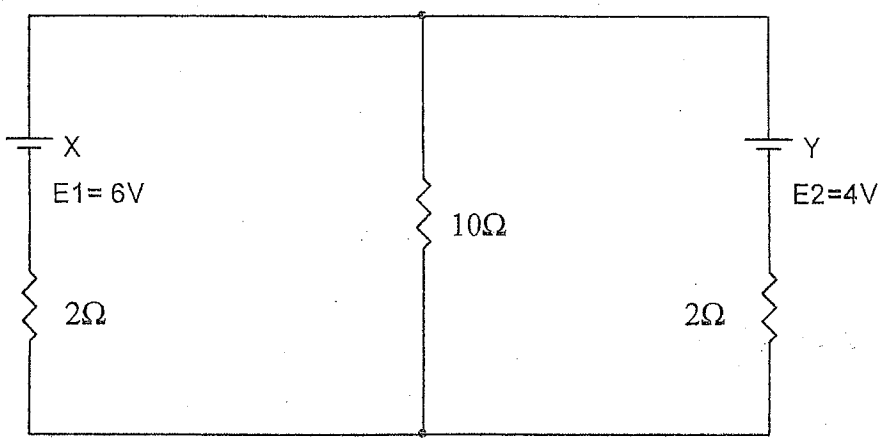

Fig Q1

(30 Marks)

2) a. What is the armature of a DC generator? What are the main types of windings of an armature?

b. Write down the EMF equation of a DC generator. Explain the terms of your equation.

c. A short shunt cumulative compound DC generator supplies 8kW at 200V. The shunt field, series field and armature resistance are 100, 0.2 and 0.4Ω respectively. Calculate

i. Induced e.m.f.
ii. Load resistance

(40 Marks)

3) a. What is the back e.m.f. of a DC motor? Derive the relation for the back e.m.f. and the supplied voltage in terms of armature resistance.

b. A 230V DC motor has an armature system of 0.6Ω. If the full load armature current is 30A and the no load armature current is 4A. Calculate the back e.m.f. at

i. no load

ii. full load

(30 Marks)