Code: R7210102

R07

B.Tech II Year I Semester (R07) Supplementary Examinations, May 2013

ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to CE and ME)

Time: 3 hours Max. Marks: 80

Answer any FIVE questions

All questions carry equal marks

*****

1 (a) State and explain Ohm's law. What are its limitations?

(b) State and explain the voltage current relationships for:

(i) Resistance.

(ii) Inductance.

(iii) Capacitance.

2 (a) Derive the EMF equation of a DC generator.

(b) A 4 - pole generator having wave wound armature winding has 51 slots, each slot contains 20 conductors. What will be the voltage generated in the machine when driven at 1500 rpm assuming the flux per pole to be 7.0 mWb?

3 (a) Explain the principle of operation of single phase transformer.

(b) A single phase transformer is connected to a 230 V, 50 Hz supply. The net cross sectional area of the core is 60 cm^2. The number of turns in the primary is 500 and in the secondary 100. Determine:

(i) Transformation ratio.

(ii) EMF induced in secondary winding.

(iii) Maximum value of flux density in the core.

4 (a) Discuss the classification of electrical instruments.

(b) Explain the significance of controlling torque and damping torque relevant to the operation of indicating instruments.

5 Explain the operation of full wave rectifier with wave forms. Derive the formulae for transformer utilization factor and ripple factor.

6 (a) Explain the principle of operation of an alternator.

(b) Draw and explain the slip torque characteristics of three phase induction motor.

7 (a) Explain the characteristics of SCR in detail.

(b) Explain the operation of a transistor as an amplifier.

8 (a) Determine how frequency is measured with the help of CRO.

(b) Discuss the various applications of CRO.

*****