Code: 9A02301

R9

B.Tech II Year I Semester (R09) Supplementary Examinations, May 2012

ELECTRICAL ENGINEERING AND ELECTRONICS ENGINEERING

(Common to AE and ME)

Time: 3 hours Max Marks: 70

A minimum of two questions from each part should be chosen for answering five questions

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PART – A (Electrical Engineering)

1 (a) State and explain Kirchhoff's laws.
(b) Three resistances 2 Ω, 4 Ω and 6 Ω are connected in series across 24 V supply.

2 (a) Derive the emf equation of DC generator.
(b) A 6-pole, lap wound armature has 840 conductors and flux per pole of 0.018 wb. Calculate the emf generated when the machine is running at 600 rpm.

3 (a) Explain the losses that occur in a single phase transformers.
(b) A single phase transformer has 350 primary and 1050 secondary turn. The net cross-sectional area of the core is 55 cm^2. If the primary winding is connected to a 400V, 50 Hz single phase supply, calculate the voltage induced in the secondary winding. Also calculate the maximum value of flux density in the core.

4 (a) Explain the principle of operation of induction motor.
(b) Explain the slip-torque characteristics of induction motor.

PART – B (Electronics Engineering)

5 (a) Explain in detail the operation of PN-junction diode and its characteristics.
(b) With a neat circuit explain the operation of half wave rectifier circuit.

6 (a) Explain in detail about frequency response of CE amplifier.
(b) Explain different applications of SCR.

7 Explain the concept of induction heating and also discuss about various industrial applications of induction heating.

8 Derive the expression for electro static deflection of CRO.

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