Code: 9A02303

R09

B.Tech II Year I Semester (R09) Supplementary Examinations, May 2013

ELECTRICAL AND MECHANICAL TECHNOLOGY

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Minimum of two questions from each part should be chosen for answering FIVE questions.
All questions carry equal marks
Use separate booklets for Part A and Part B

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PART - A

1 (a) Explain the types of DC generators.
(b) Derive the torque equation of DC motor.

2 (a) Explain the principle of operation of single phase transformer.
(b) Define and derive the equation for efficiency and regulation of transformer.

3 Explain the method of finding regulation by synchronous impedance method by neat circuit diagram.

4 Explain the principle and operation of any one type of moving iron instruments with neat diagram.

PART - B

5 Write short notes on:
(a) Welding rods.
(b) Welding fluxes.
(c) Gas flames.
(d) Working pressure of gases in gas welding and cutting.

6 (a) Explain with the help of neat sketch a single stage impulse turbine. Also explain the pressure and velocity along the axial direction.
(b) With help of neat sketches describe working of a four stroke cycle internal combustion engine.

7 (a) Why is the air compressed in stages with intermediate water cooling preferably to the original temperature? Give the optimum value of intermediate pressure to the two stages with perfect cooling.
(b) Two gears in mesh have 100 and 25 teeth respectively. The module of the gears is 4 mm. Find out the distance between the centers of the two gears.

8 (a) Describe the block diagram of a vapour compression refrigeration system.
(b) How the belt and bucket conveyers are used as mechanical handling equipments? Explain.

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