Code: 15A02306

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B.Tech II Year II Semester (R15) Regular Examinations May/June 2017

ELECTRICAL TECHNOLOGY

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Define critical speed of a DC shunt generator.
(b) What is the function of compensating winding in DC machines?
(c) Write the applications of DC motors.
(d) What are the different losses in a DC machine?
(e) Define voltage regulation of a single phase transformer.
(f) What is power transformer and distribution transformer?
(g) Explain the principle of operation of three phase induction motor.
(h) Why is an induction motor called a generalized transformer?
(i) Write the E.M.F equation of a synchronous machine.
(j) Define voltage regulation of an alternator.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain the constructional features of DC machine and state the function of each part.

OR

3 (a) Explain the principle of operation of DC generator.
(b) Derive the EMF equation of a DC generator.

UNIT – II

4 Discuss in detail the working of three point starter with neat diagram.

OR

5 (a) Explain the principle of operation of DC motor.
(b) Explain about the different types of DC motors.

UNIT – III

6 (a) Explain the principle of operation of a single phase transformer.
(b) Derive an expression for the Induced emf in the transformer winding.

OR

7 Draw the exact equivalent circuit of a transformer and describe the various parameters involved in it.

UNIT – IV

8 Describe with a suitable diagram the constructional features of squirrel-cage and slip-ring induction motor.

OR

9 (a) Derive the equation for the torque developed in an induction motor.
(b) Deduce an expression for the rotor current frequency in terms of the supply frequency.

UNIT – V

10 With the help of neat diagram, describe the main parts of an alternator with their functions.

OR

11 Discuss the synchronous impedance method for calculating regulation of an alternator.

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