1309

April 2025

Time – Three hours
(Maximum Marks: 100)

[**N.B.** Answer all the questions, choosing any two subdivision from each question. Each subdivision carries 10 marks.]

1. (a) (i) Write about the following: electric field and electric flux. (4)
      (ii) Write the importance of DC generators in power generation and in industries. (6)

   (b) Define critical field resistance. Also write about the process of building up of EMF.

   (c) Discuss about the analysis of armature reaction effects.

   (d) Explain the methods of improving commutation process.

2. (a) Discuss about the types of DC motors.

   (b) Explain the working of four point starter with a neat diagram.

   (c) Write a note on stepper motor.

   (d) Discuss about any one method of speed control of DC motors.

3. (a) Derive the EMF equation of transformer. Also list the applications of transformer.

   (b) Write a note on auto transformer.

   (c) Discuss about the determination of equivalent circuit constants of a single phase transformer.

   (d) Write a note on losses and efficiency in transformer.

4. (a) Discuss about the parallel operation and grouping of three phase transformers.

   (b) Explain the constructional details of three phase transformer.

   (c) Write about ON load tap changers.

   (d) Write a note on any two transformer accessories.

5. (a) Discuss about the resurfacing of commutator and brushes.

   (b) Write a note on preventive and break down maintenance of DC machines.

   (c) Explain about the acidity test in a transformer.

   (d) What is earthing? Also write about the measurement of earth resistance.