Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (EEE) (Sem.–6)

# POWER SYSTEM-II

Subject Code : EE-306

Paper ID : [A0421]

Time : 3 Hrs. Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

## SECTION-A

**1. Write briefly :**

a) Name the equipments used in substations.

b) What is an isolator and why is it used in the power system?

c) Define resistance switching.

d) What is meant by electronegativity of $SF_6$ gas?

e) What is the need of relay coordination?

f) List the advantages of static relay.

g) Define differential relay.

h) Define operating and restraining torque.

i) List the possibilities of abnormal conditions in an alternator.

j) Explain Peterson coil.

## SECTION -B

2. Draw and explain the schematic of an impedance relay and its operating characteristics on R-X diagram.

3. With a neat sketch explain the differential system of protection applied to Star / Delta connected power Transformer.

4. Explain the theories involved in the interruption of the arc.

5. Explain negative sequence relay.

6. Explain the working principle of Surge Absorber.

## SECTION-C

7. Explain the working principle and constructional details of Air Blast Circuit Breaker.

8. a) Explain carrier aided distance protection.

   b) Discuss the selection of distance relays for the protection of long, medium and short transmission lines against

      i) Ground faults

      ii) Phase faults

9. a) Explain different types of Bus-bar arrangements in substation with the help of single line diagram.

   b) A 5000 KVA, 6600 V, star connected alternator has a synchronous reactance of 2 Ω per phase and 0.5 Ω resistance. It is protected by Merz prize balanced current system which operates when the out of balanced current exceeds 30% of the load current. Determine what proportion of the alternator winding is unprotected if the star point is earthed through a resistor of 6.5 Ω?