

Code: EE7T3

**IV B.Tech - I Semester – Regular/Supplementary Examinations
October - 2018**

**SWITCHGEAR PROTECTION & CARRIER
COMMUNICATION
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1.

- a) Define recovery voltage.
- b) What are the types of air blast circuit breaker?
- c) Mention the different methods of high resistance arc interruption.
- d) List essential qualities of a protective relaying.
- e) What are the merits of mho relay?
- f) What is meant by time setting multiplier in protective relay?
- g) Give the disadvantages of basic differential scheme.
- h) What are the causes of bus zone faults?
- i) List the merits and demerits of solid grounding.
- j) State the attenuation and distortion of traveling waves.
- k) What is insulation coordination?

PART – B

Answer any **THREE** questions. All questions carry equal marks.

$$3 \times 16 = 48 \text{ M}$$

2. a) Discuss the recovery rate theory and energy balance theory of arc interruption in circuit breaker. 8 M
- b) Derive the expression for critical resistance to protect circuit breaker. 8 M
3. a) Explain with the help of neat sketch the working principle and operation of attracted armature type electromagnetic relay. 8 M
- b) What is a static relay? What are the merits and demerits of static relays over electromagnetic relays also mention its applications. 8 M
4. Explain the principle of distance relays stating clearly the difference between impedance relay, reactance and mho relay. Indicate the difference on R-X diagrams and show where each type is suitable. 16 M
5. a) Discuss the protection employed against loss of excitation of an alternator. 8 M

b) State the abnormalities and faults in connection with bus bars and explain the protection. 8 M

6. a) What are the effects of ungrounded neutral on system performance? 8 M

b) Describe the protection of stations and sub-stations against direct lightning stroke. 8 M