

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2170908**Date:21/11/2016****Subject Name:Switch Gear and Protection****Time:10.30 AM to 1.00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss various zones of protection for a modern power system. Explain primary and back-up protection. **07**
- (b) Explain construction and working principle of induction cup type electromagnetic relays. Derive an expression for torque produced by induction type relay. **07**
- Q.2** (a) Describe plug setting multiplier and time multiplier setting with suitable example. **07**
- (b) Draw the phasor diagram for 30° and 60° connection of directional over current relay. Explain Limitations of O.C. Relays. **07**
- OR**
- (b) Explain construction, working and operating characteristics of percentage differential relay. **07**
- Q.3** (a) Explain restricted earth fault protection of three phase transformer. **07**
- (b) Explain under reach and over reach of distance relay. **07**
- OR**
- Q.3** (a) Show the characteristics of following distance relays on R-X diagram. (i) Reactance relay (ii) Mho relay (iii) Impedance relay **07**
- (b) Draw and explain schematic diagram for coupling and trapping the carrier in to the desired line section. **07**
- Q.4** (a) Draw and explain protection of generator against unbalanced loading. **07**
- (b) Enlist and explain abnormal conditions take place in three phase induction motor. **07**
- OR**
- Q.4** (a) Draw and explain block diagram of microprocessor based distance relay. **07**
- (b) With neat diagram explain “The restriking and recovery Voltage” Discuss factors affecting it. **07**
- Q.5** (a) Write a short note on oil circuit breaker with neat sketch. **07**
- (b) Write merits of SF6 gas as insulating and arc quenching medium and property of SF6 gas. **07**
- OR**
- Q.5** (a) With neat diagram explain HVDC circuit breaker. **07**
- (b) Write and explain difference between measurement CT & protective CT. **07**
