

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- VIIth SEMESTER-EXAMINATION – MAY/JUNE- 2012

Subject code: 170903

Date: 09/06/2012

Subject Name: Power System Protection

Time: 02:30 pm – 05:00 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) Explain seal in Relay in over current protection. 7
(B) What is the importance of extremely inverse characteristic relay: 7
- Q.2 (A) Draw Relay-CT connection diagram for over current protection of line. 7
Why phase fault relays are having higher settings and more plug positions, while earth fault relays are having lower settings and usually only two plug positions?
(B) Draw a simple sketch to explain directional over current relay. 7
- OR
- (B) How 30° , 60° and 90° connections for directional relay are obtained? 7
What is the importance of such connections?
- Q.3 (A) Discuss suitability of following distance relay for long, medium and short line protection 7
(i) Impedance Relay
(ii) Mho relay
(iii) Reactance Relay
(B) Give comparison of 7
(i) Measuring CT and protection CT
(ii) Magnetic PT and CVT
- OR
- Q.3 (A) Give Relay CT connections for the protection of y/y connected transformer by biased differential relay. 7
(B) With neat sketch explain harmonic restraint. 7
- Q.4 (A) Explain power line carrier current protection by direction comparison showing schematic connection dia. of equipments used in it. 7
(B) Explain over fluxing protection of transformer. 7
- OR
- Q.4 (A) Discuss the Buchholz relay for the power transformer protection. When it Maloperates. 7
(B) What do you understand by “over reach” and “under reach” in distance relay protection? 7

- Q.5 (A) A generator is delivering 400 Amp. Load current and protected by biased differential relay with characteristic having 0.1 bias and 0.1 Amp. setting. 7
A high resistance fault of 16 Amp occur near neutral which is earthed. CT's used are 400/5.
- I. Will the relay operate in this condition?
 - II. What will happen to the relay if the breaker is tripped manually?
- (B) Discuss any two protections below 7
- (i) Negative phase sequence protection
 - (ii) Reverse power protection of generator
 - (iii) Field failure protection of generator
- OR
- Q.5 (A) Discuss the restricted earth fault protection OR Rotor earth fault protection 7
- (B) Discuss Bus Zone protection having coupler breaker between two bus sections. OR Give the list of large induction motor protections. 7
