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. 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?	**7**
	(B)	Draw a simple sketch to explain directional over current relay.	**7**
		OR	
	(B)	How 30^0, 60^0 and 90^0 connections for directional relay are obtained? What is the importance of such connections?	**7**
Q.3	(A)	Discuss suitability of following distance relay for long, medium and short line protection (i) Impedance Relay (ii) Mho relay (iii) Reactance Relay	**7**
	(B)	Give comparison of (i) Measuring CT and protection CT (ii) Magnetic PT and CVT	**7**
		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. A high resistance fault of 16 Amp occur near neutral which is earthed. CT's used are 400/5. **7**

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**

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