Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: X 70901 **Date: 03-12-2013**

Subject Name: Power System Protection

Time: 10.30 am - 01.00 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 the term (i) plug setting multiplier (ii) Time Multiplier setting with IDMT relays. What are their significance in relay operation	**07**
	(b)	Describe the principle of directional over current relay. How does it help in discrimination in protection of parallel feeders and ring mains	**07**
Q.2	**(a)**	What do you understand by a Zone of protection? Discuss various zones of protection for a modern power system	**07**
	(b)	Draw a neat sketch of induction disc type relay and discuss its operating principle	**07**
		OR	
	(b)	Explain impedance relay characteristic on the R-X diagram. Discuss the range setting of three impedance relays placed at a particular location. Discuss why the I zone unit is not set for the protection of 100% of the line	**07**
Q.3	**(a)**	Explain IDMT Relay construction with neat diagram.	**07**
	(b)	Explain bucholz relay for transformer protection.	**07**
		OR	
Q.3	**(a)**	Explain protection scheme for transmission line.	**07**
	(b)	Explain protection scheme for alternator.	**07**
Q.4	**(a)**	Explain various types of Installation and commissioning tests for Relay	**07**
	(b)	What is the principle of harmonic restraint relay? Explain its application.	**07**
		OR	
Q.4	**(a)**	Discuss the various transformer faults. What are the different protection schemes available for transformer	**07**
	(b)	Explain various parts of numerical relay with its block diagram	**07**
Q.5	**(a)**	Describe the principle of differential system of protection applied to a power transformer. What are the shortcomings of this scheme and how are they overcome?	**07**
	(b)	What is unit protection? What are its merits and demerits? How does carrier aided distance protection give better performance than carrier current protection	**07**
		OR	
Q.5	**(a)**	Describe the protection scheme of an alternator against inter turn fault.	**07**
	(b)	What are the types of faults that are likely to occur in a three phase induction motor? Distinguish between short circuit protection, overload protection and earth fault protection of motor	**07**

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