Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC– SEMESTER VII– • EXAMINATION – SUMMER - 2016

Subject Code:X70901 **Date:23/11/2016**

Subject Name: Power System 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)**	State the types of back up protection and differentiate between primary and back up protection.	**07**
	(b)	What are the essential requirements of good protective system?	**07**
Q.2	**(a)**	Explain the principle and working of induction cup type relay with torque equation.	**07**
	(b)	Explain the characteristics of resistance, reactance and mho type distance relay.	**07**
		OR	
	(b)	Explain How the plug setting and time setting is carried out for overload relay with necessary example.	**07**
Q.3	**(a)**	Explain the construction and working principle of Gas operated relay.	**07**
	(b)	Which type of protection is provided to small 3-phase induction motor? Explain it with necessary circuit diagram.	**07**
		OR	
Q.3	**(a)**	Draw well labeled basic trip circuit of relay and explain the function of each component.	**07**
	(b)	Explain the restricted earth fault protection.	**07**
Q.4	**(a)**	What do you mean by biased differential protection? Explain the problems and remedies associated with the differential protection of transformer.	**07**
	(b)	State sampling theorem. Explain the numerical relay with block diagram.	**07**
		OR	
Q.4	**(a)**	Explain the comparison between IIR and FIR filter.	**07**
	(b)	Explain the installation and commissioning test of relay.	**07**
Q.5	**(a)**	Explain the zone of protection for transmission line.	**07**
	(b)	Explain the need and principle of carrier aided protection scheme for transmission line.	**07**
		OR	
Q.5	**(a)**	Explain the least error squared technique (LE).	**07**
	(b)	Explain the current and time discrimination scheme for protection of transmission line.	**07**

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