Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – SUMMER 2013

Subject Code: 170903 **Date: 28-05-2013**

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)	Clearly distinguish the terms "Overload" and "Overcurrent". Explain the types of backup protection.	07
(b)	With a neat sketch, explain induction cup type directional relay.	07
Q.2(a)	Explain the advantages of static relay over electromagnetic relay.	07
(b)	Describe the principle of circulating current differential Protection.	07
	OR	
(b)	Define the following terms as applied to protective relays. (1) Burden (2) Pick-up (3) Reach (4) Plug setting multiplier.	07
Q.3(a)	Explain the faults in transformer. Explain the construction and Working Principle of Buchholz relay.	07
(b)	Draw a detailed protection scheme for biased differential Protection of a 11/132-kv , 150 MVA, DY-1 power transformer. Suggest suitable CT ratios.	07
	OR	
Q.3(a)	Explain the need for carrier aided protection of transmission lines. Also explain the block diagram of a carrier current protection scheme.	07
(b)	Explain the characteristic of different types of distance relays.	07
Q.4(a)	Explain the negative phase sequence and field failure protection of Generator.	07
(b)	Explain the protection of large induction motor.	07
	OR	
Q.4(a)	Explain the sampling theorem and block diagram of numerical relay.	07
(b)	Give the comparison between FIR and IIR filter.	07
Q.5(a)	Explain the installation and commissioning test of relays in brief.	07
(b)	Explain current, time and current-time discrimination methods of protection of transmission line.	07
	OR	
Q.5(a)	Explain the split –bus protection and duplicate bus protection scheme.	07
(b)	Explain restricted earth fault and zone of protection.	07

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