Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (OLD) EXAMINATION – WINTER 2018

Subject Code: 170903 **Date: 26/11/2018**

Subject Name: Power System Protection

Time: 10:30 AM TO 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)**	With neat diagram explain basic protection circuit with function of all elements.	**07**
	(b)	Describe principle of differential protection with need of restraining coil.	**07**
Q.2	**(a)**	Derive torque equation of induction disc type electromagnetic relay with diagram.	**07**
	(b)	Discuss advantages and disadvantages of Numerical relays. Why more and more numerical relays are used nowadays.	**07**
		OR	
	(b)	Define: PSM, TSM, Plug setting, Reset, Backup protection	**07**
Q.3	**(a)**	What protective scheme is used for the protection of Parallel Feeders and Ring main system.	**07**
	(b)	How IDMT relay is provided with directional feature. Explain with diagram.	**07**
		OR	
Q.3	**(a)**	Why are 30°, 60° and 90° connections required in directional relays. Draw vector diagram of the 90° connection finding what is the maximum torque angle.	**07**
	(b)	What is importance of Busbar in substation. Explain Busbar protection scheme.	**07**
Q.4	**(a)**	What are the limitations found in the simple differential protection of transformer? How are they overcome?	**07**
	(b)	Explain restricted earth fault protection of transformer.	**07**
		OR	
Q.4	**(a)**	Explain characteristics of different types of distance relays: Impedance, reactance and mho ralay.	**07**
	(b)	Explain with neat sketch power line carrier current protection.	**07**
Q.5	**(a)**	Discuss protection employed against loss of excitation of alternator.	**07**
	(b)	Explain the protection of large induction motor.	**07**
		OR	
Q.5	**(a)**	Write short note on micro processor based over current relay.	**07**
	(b)	Write brief note on type tests carried out on relays.	**07**

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