Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2182407 **Date: 02/05/2017**

Subject Name: Switch Gear & 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)**	Explain Different Characteristic of distance relay. Compare them for their performance with small, medium and long transmission lines.	**07**
	(b)	Explain the advantages of static relay over electromagnetic relay.	**07**
Q.2	**(a)**	Explain following: Restriking Voltage Transient Recovery Voltage RRRV	**07**
	(b)	Write a brief note on Vacuum circuit breaker and compare its advantage over oil circuit breaker.	**07**
		OR	
	(b)	Discuss the interruption of small inductive current (current chopping) with relevant diagram.	**07**
Q.3	**(a)**	What are various faults in transformer? Explain the construction and working principle of Buchholz relay.	**07**
	(b)	A 3-Phase, 4- pole, 10 kV Synchronous Generator is provided with restricted earth fault protection. Its neutral point is earthed through a resistance of 12 ohms and the relay is set to operate when there is an out of balance current of 1A. The CT's ratio is 1000:5. What percentage of the winding is protected against the earth fault? What must be minimum value of earthing resistance to give 93% protection to each phase winding?	**07**
		OR	
Q.3	**(a)**	Explain the carrier current based transmission line protection scheme with block diagram.	**07**
	(b)	A 3-phase transformer having line voltage ratio of 440 V/11 kV is connected in Star/Delta configuration. The current transformer on the LV side have a current ratio of 200:1. What must be the ratio of the current transformer connected on HV side? Draw the transformer connection and CT connection diagram.	**07**
Q.4	**(a)**	Explain impedance relay with its application operational parameters and operating Characteristics	**07**
	(b)	What is the need of Neutral grounding? Explain any two methods of Neutral Grounding.	**07**
		OR	
Q.4	**(a)**	Explain Inter turn fault protection scheme for generator.	**07**
	(b)	Write a short note on Directional relay.	**07**
Q.5	**(a)**	Explain the method of protecting bus bars using differential relaying. What are the limitations of this method and to what extent can these be overcome.	**07**
	(b)	Explain the construction and working principle of Zinc Oxide lightning arrester.	**07**
		OR	
Q.5	**(a)**	Draw the schematic diagram of (1-Phase) a sub-station showing typical position of various equipment in it.	**07**
	(b)	Explain auto-reclosing in power system protection.	**07**

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