Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER V • EXAMINATION – WINTER - 2012

Subject code: 150905 **Date: 22-01-2013**

Subject Name: Switchgear

Time: 02:30 pm to 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)**	Explain slepian's theory of arc interruption and discuss its limitation.	**07**
	(b)	How does energy balance theory explain the process of arc interruption?	**07**
Q.2	**(a)**	Explain restriking voltage and recovery voltage with diagram.	**07**
	(b)	Explain the physics of arc phenomena and what factor does the arc phenomena depend.	**07**
		OR	
	(b)	For 132 kv system the reactance and capacitance up to the location of circuit breaker is 3 ohm and 0.015 micro farad respectively calculate (1) The frequency of transient oscillation (2) The max value of restriking voltage across the contact of circuit breaker.(3) the max value of RRRV.	**07**
Q.3	**(a)**	Explain advantages of air blast circuit breaker over the oil circuit breaker.	**07**
	(b)	Discuss the operating principle of SF 6 circuit breaker and what its advantage over other circuit breaker is.	**07**
		OR	
Q.3	**(a)**	Describe the construction operating principle and application of vacuum circuit breaker.	**07**
	(b)	Describe the working principle of axial air blast circuit breaker and explain why resistance switching is used with this type of circuit breaker.	**07**
Q.4	**(a)**	What are the main parts of equipment which are used for testing of circuit breaker in laboratory type testing station?	**07**
	(b)	What is the difficulty in the development of HVDC circuit breaker? Describe its construction and operating principal.	**07**
		OR	
Q.4	**(a)**	Write short note on minimum oil circuit breaker.	**07**
Q.4	**(b)**	Write short note on air circuit breaker.	**07**
Q.5	**(a)**	Write short note on rating of circuit breaker.	**07**
	(b)	Explain current chopping.	**07**
		OR	
Q.5	**(a)**	Explain operating mechanism to open and close contact of circuit breaker.	**07**
	(b)	Discuss the performance of circuit breaker when capacitive current are interrupted.	**07**

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