Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012

Subject code: 162403 **Date: 04/01/2013**

Subject Name: Switch Gear and Fault Analysis

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Describe short circuit in brief. Discuss the possible causes of short-circuit in a power system and its harmful effects.	**07**
	(b)	Differentiate between earthing switch & isolator, and explain the requirement of isolator and earthing switches.	**07**
Q.2	**(a)**	Define fuse and fuse element. Discuss in brief the desirable characteristics of fuse element.	**07**
	(b)	Draw the diagram of SF6 circuit breaker and explain its working in detail.	**07**
		OR	
	(b)	Explain the construction and working of vacuum circuit breaker with a neat diagram.	**07**
Q.3	**(a)**	Describe Per Unit method of representing quantities along with its advantages and disadvantages.	**07**
	(b)	Define fault & explain double line to ground fault of unloaded synchronous generator.	**07**
		OR	
Q.3	**(a)**	Explain construction and operation of current limiting reactors.	**07**
	(b)	Define fault & explain fault analysis of single line to ground fault (L-G) of unloaded synchronous generator.	**07**
Q.4	**(a)**	Explain the construction and operation of buchholz relay with a neat diagram.	**07**
	(b)	What do you mean by distance protection? Explain the requirement of distance protection and list its types. Draw necessary diagrams.	**07**
		OR	
Q.4	**(a)**	Explain the construction and operation of Electromagnetic Induction relay with a neat diagram.	**07**
Q.4	**(b)**	Explain the working principle of induction relay with a neat diagram and derive its torque equation.	**07**
Q.5	**(a)**	Write a short note on 1) Static relay 2) Microcontroller based digital relay.	**07**
	(b)	Explain the phenomenon of auto-reclosure in circuit breakers giving proper example.	**07**
		OR	
Q.5	**(a)**	List some commonly used electronic circuits in static relays. Explain any two with neat diagrams.	**07**
	(b)	Write a short note on 1) Duties of circuit breakers 2) Fault clearing process.	**07**

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