

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. Sem. - V - Examination – June- 2011****Subject code: 150905****Subject Name: Switchgear****Date: 29/06/2011****Time: 10:30 am – 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) Discuss the rate recovery theory of arc interruption in circuit breaker. **07**
(b) Discuss the energy balance theory of arc interruption in circuit breaker. **07**

- Q.2** (a) Explain the term restriking voltage, recovery voltage and rate of rise of restriking voltage. **07**
(b) For a 132 kv system the reluctance and capacitance up to the location of circuit breaker is 3 ohms and 0.015 micro farad calculate the (1) The frequency of transient oscillation (2) The maximum value of restriking voltage across the contact of the circuit breaker. (3) The max value of RRRV **07**

OR

- (b) A 50 Hz, 11 Kv, 3 phase alternator with earthed neutral has reactance of 5 ohms per phase, and connected to busbar through circuit breaker, the capacitance to earth between the alternator and C.B. is 0.02 micro farad per phase. Assuming resistance of generator to be negligible calculate the (1) The frequency of transient oscillation (2) The maximum value of voltage across the contact of the circuit breaker. (3) The average RRRV up to the first peak. **07**

- Q.3** (a) Explain resistance switching. **07**
(b) Explain current chopping in circuit breaker. **07**

OR

- Q.3** (a) Explain different rating of circuit breaker. **07**
(b) Basic construction of air blast circuit breaker. **07**

- Q.4** (a) In what respect is a M.O.C.B. an improvement over B.O.C.B. what are limitations of M.O.C.B. **07**
(b) Discuss the merits of vacuum circuit breaker and problems involved. **07**

OR

- Q.4** (a) Write short note on merits of SF₆ gas as insulating and arc quenching medium and properties of SF₆ gas. **07**
(b) Explain method of increasing arc length. **07**

- Q.5** (a) What is the principle of breaking DC current and in what respect does it differ from AC. **07**
(b) Discuss the merits and demerits of series air blast circuit breaker **07**

OR

- Q.5** (a) Draw a basic short circuit testing plant of circuit breaker **07**
(b) Explain parallel current injection method of synthetic testing of circuit breaker. **07**
