

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 150905****Date: 06/06/2012****Subject Name: Switchgear****Time: 02:30 pm – 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 the factors affecting the instantaneous value of recovery voltage at the instant of final current zero. **07**
(b) Describe in detail the ratings of a circuit breaker. **07**
- Q.2** (a) Write a short note on current chopping. **07**
(b) Describe the duty of capacitor switching of a circuit breaker. **07**
- OR**
- (b) Explain the methods of increasing arc resistance. **07**
- Q.3** (a) A 50 Hz, 11 kV, three-phase alternator with earthed neutral has a reactance of 5 ohms per phase, and is connected to busbar through a circuit breaker. The capacitance to earth between the alternator and the circuit breaker is 0.02 μ F per phase. Assuming the resistance of the generator to be negligible calculate the following. **07**
(a) Maximum voltage across the contacts of the circuit breaker.
(b) Frequency of oscillations and (c) The average rate of rise of restriking voltage up to the first peak.
- (b) Write a short note on minimum oil circuit breaker. **07**
- OR**
- Q.3** (a) Write a short note on factors affecting performance of air blast circuit breaker. **07**
(b) Describe the desired properties of a vacuum circuit breaker contact material. **07**
- Q.4** (a) Write the dielectric properties and arc quenching properties of SF₆ gas. **07**
(b) Write a short note on HVDC circuit breaker. **07**
- OR**
- Q.4** (a) Write a short note on selection of type of circuit breaker. **07**
(b) Describe in brief the physics of arc phenomenon. **07**
- Q.5** (a) Explain low resistance arc interruption theory. **07**
(b) Write a short note on the properties of oil used for circuit breaker. **07**
- OR**
- Q.5** (a) Describe characteristics of restriking voltage across circuit breaker. **07**
(b) Write a short note on indirect testing of circuit breaker. **07**
