

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-V Examination-Nov/Dec.-2011

Subject code: 150905
Subject Name: Switchgear

Date: 01/12/2011
Time: 2.30 pm -5.00 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 process of arc initiation in Circuit Breaker. Describe properties of arc and arc extinction. (07)
- (b) Give classification of Circuit Breakers. Describe with neat sketch “Air-Break Circuit Breaker” (07)

- Q-2 (a) With neat circuit diagram explain restriking and recovery voltage in brief. (07)
- (b) Define the term “**switchgear**” and describe the voltage distribution in multi-break circuit breakers in ABCB. (07)

OR

- (b) (1) Discuss the chemical, physical and dielectric properties of SF₆ gas. (07)
- (2) Compare SF₆ and Vacuum Circuit Breaker .
- Q-3 (a) Write short note of the following: (07)
- (i) Current Chopping
- (ii) P.f. correction by series resistance.
- (b) Discuss the principle of arc extinction in an oil circuit breaker. Describe the phenomenon of pre-arcing . (07)

OR

- Q-3 (a) Write short note of the following: (07)
- (i) Short note on capacitive current breaking.
- (ii) Resistance switching in Air Blast Circuit Breaker
- (b) Describe the Temperature rise Test and Mechanical Test (Endurance Test) of HVAC Circuit Breaker. (07)

- Q-4 (a) Describe with neat sketch Vacuum Circuit Breaker. (07)
(b) Describe with neat sketch single puffer SF₆ Circuit Breaker. (07)

OR

- Q-4 (a) Write short note on maintenance of C.B. and describe the various testing of C.B. (07)
(b) (i) Differentiate between Circuit breaker and Fuse (07)
(ii) Differentiate between Circuit breaker and isolators.

- Q-5 (a) In a system the r.m.s is 19.1 kV, L is 10mH, C is 0.02 mF. Determine the average rate of rise of restriking voltage, when the circuit breaker opens. (07)
(b) What is the important of testing of Circuit Breaker? Describe direct testing method of a Circuit Breaker. (07)

OR

- Q-5 (a) Attempt any **two**: (07)
(i) Advantages and disadvantages of ABCB
(ii) Synthetic testing of Circuit Breaker & its limitation.
(iii) Application of D.C. Circuit Breaker.
(b) Describe the following : (07)
(i) Problem associated with the interruption of Small inductive currents
(ii) Effect of Power Factor on TRV.
