

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**
