

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2734

Roll No.

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B.Tech.

(SEM. VII) THEORY EXAMINATION 2011-12

SWITCH GEAR AND PROTECTION

Time : 3 Hours

Total Marks : 100

Note :— (1) Attempt all questions.

(2) All questions carry equal marks.

(3) Be precise in your answers

1. Attempt any two parts of the following : **(10×2=20)**

(a) What is a distance relay ? Draw its characteristics. How is directional features added with overcurrent relays ? Why is it required ?

(b) What are primary and back-up protections ? What are various kinds of back-up protections ?

(c) What is a zone of protection ? Discuss various zones of protection of a power system with the help of line diagram.

2. Attempt any two parts of the following : **(10×2=20)**

(a) Describe various types of phase compensators used in static relays.

- (b) Compare a static relay with electromagnetic relays.
- (c) Explain differential protection of a bus using high impedance relay or linear couplers.
3. Attempt any **two** parts of the following : **(10×2=20)**
- (a) Describe different types of distance relays used for protection of transmission line of power system. Which one is the best and why ?
- (b) Explain with a suitable example the phenomenon of auto reclosing.
- (c) What are the problems associated with short line interruption ? How is the problem eliminated ?
4. Attempt any **two** parts of the following : **(10×2=20)**
- (a) Discuss about RRRV. Draw a neat diagram to show the voltage and current during relay and circuit breaker operations. Discuss about active recovery voltage, relay operating time, circuit breaking time and circuit making time.
- (b) Give a complete protection scheme for alternator.
- (c) Discuss the behaviour of electric arc in vacuum with the help of a neat diagram. Explain the construction of a vacuum ckt. breaker.

5. Attempt any **two** parts of the following : **(10×2=20)**
- (a) Explain the phenomenon of current chopping in a circuit breaker.
- (b) Describe pilot wire protection, its merits and demerits in detail.
- (c) Draw appropriate diagrams to show the complete operation of a SF₆ circuit breaker. Give the merits of SF₆ circuit breakers.