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

PAPER ID : 2734 Roll No.

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.

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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 SF_6 circuit breaker. Give the merits of SF_6 circuit breakers.