



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

PAPER ID : 0200

Roll No.

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B.Tech

(SEM VII) ODD SEMESTER THEORY EXAMINATION 2009-10 SWITCHGEAR & PROTECTION

Time : 3 Hours]

[Total Marks : 100

Note : Attempt all questions.

1 Attempt any **four** of the following : **5×4=20**

- (a) "Relay is the brain of protection". Justify this statement using trip circuit.
- (b) Describe about primary and backup protection. What is meant by time graded over current protection ?
- (c) Discuss about any four major qualities a relay should possess.
- (d) Draw a neat diagram of gas actuated relay. What is its location and use in the device ?
- (e) Discuss about wattmetric type induction disc relay in detail.
- (f) Define the following :
 - (i) Pick-up
 - (ii) Drop out
 - (iii) Reset
 - (iv) Interlock
 - (v) Blind spot.



2 Attempt any **two** of the following : **10×2=20**

- (a) Discuss about phase and amplitude comparators in detail.
- (b) What is a distance relay ? Draw its characteristics. How is directional feature added with over current relays ? Why is it required ?
- (c) Compare a static relay with electromagnetic relays.

3 Attempt any **two** of the following : **10×2=20**

- (a) Describe different types of distance relays used for protection of transmission lines. Which one is the best and why ?
- (b) Describe pilot wire protection, its merits and demerits in detail.
- (c) How is a bus bar protected ?

4 Attempt any **two** of the following : **10×2=20**

- (a) What are the problems associated with short line interruption ? How is the problem eliminated ?
- (b) Describe about the direct and indirect testing procedure for a circuit breaker.
- (c) Discuss about RRRV. Draw a neat diagram to show the voltages and current during relay and circuit breaker operations. Discuss about active recovery voltage, relay operating time, circuit breaking time and circuit making time.



5 Attempt any two of the following : 10×2=20

- (a) Describe the construction and operation of a minimum oil circuit breaker.
- (b) Draw appropriate diagrams to show the complete operation of a sf_6 circuit breaker. Give the merits of sf_6 circuit breakers.
- (c) Give a complete protection scheme for Alternator.