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Printed Pages : 3

TEE-701

(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) EXAMINATION, 2008-09 SWITCH GEAR & PROTECTION

Time : 3 Hours]

[Total Marks : 100

- Note :
- (1) Attempt all questions.
 - (2) All questions carry equal marks.
 - (3) Be precise in your answer.
 - (4) No second answer book will be provided.

1 Attempt any **two** parts of the following :

- (a) What are primary and back-up protections? 10
What are various kinds of back-up protections?
- (b) Draw a neat sketch of an induction disc or cup type relay and explain its principle of operation. 10
- (c) Discuss the working principle, types and applications of thermal relays. 10

2 Attempt any **two** parts of the following :

- (a) What are the advantages and limitations of static relays over electromagnetic relays. 10
Also discuss the main components of a static relay.



(b) Describe various types of phase comparators used in static relays. 10

(c) Classify various types of over current relays and give their applications alongwith their approximate characteristics and general time-current equations. 10

3 Attempt any two parts of the following :

(a) Draw and explain the characteristics of a MHO relay. Why a MHO relay is preferred for protection of longlives against phase faults ? 10

(b) Explain with a suitable example the phenomenon of auto reclosing. 10

(c) Explain the term 'pilot' with reference to power line protection. What are the different types of pilot schemes which are presently employed in transmission line protection? 10

4 Attempt any two parts of the following :

(a) What is the significance of RRRV in operation of a circuit breaker. Also derive the relation for RRRV considering a simple power system. 10

(b) What are the different tests carried out on a circuit breaker? Differentiate and explain type and routine tests. 10

(c) What is the difference between direct and indirect testing? Also describe the procedure of indirect testing. 10

5 Attempt any two parts of the following :

(a) Discuss the behaviour of electric arc in vacuum with the help of a neat diagram. 10

Explain the construction of a vacuum circuit breaker.

(b) Explain the construction and working of a puffer type SF₆ circuit breaker. Also enumerate the properties of SF₆ gas which make it a good dielectric and arc quenching medium. 10

(c) Explain the protection of a three phase star connected generator by means of a percentage differential relay. 10