

V Sem B Tech Degree Examination(New scheme)November 2015
13.503 SWITCHGEAR AND PROTECTION(E)

Time: 3 hours

Max. Marks: 100

Part A

Answer All questions,each carries 2 marks.

1. What are the requirements of protective relaying?
2. Briefly explain the arc phenomena related to circuit breaker.
3. Define RRRV
4. Write a note on protective zones.
5. Explain about differential relay.
6. Draw the block diagram of static relay
7. Explain microprocessor based protective relaying
8. Explain Bewley lattice diagram
9. Explain the purpose of surge absorber
10. What is Translay Relay

Part B

Answer Any One question from each module,each carries 20 marks.

Module-I

11. (a) With a neat diagram,explain the construction, working, merits and demerits of SF6 Circuit breakers.
(b) A 3 phase alternator has a line voltage of 11 kV. The generator is connected to a circuit breaker. The inductive reactance up to the circuit breaker reading is 5Ω per phase. The distributed capacitance up to circuit breaker between phase and neutral is 0.01 micro F. Determine
 - (a) Peak restriking voltage across the circuit breaker
 - (b) Frequency of restriking voltage transient.
 - (c) Average rate of restiking voltage up to peak restriking voltage.
12. (a) A 3 phase circuit breaker is rated at 1250 A, 2000 MVA, 33 kV, 4 seconds. Find the rated symmetrical breaking current, making current and short time rating.
(b) Explain about
 - (a) Resistance Switching.
 - (b) Current Chopping

Module-II

13. (a) With a neat diagram, explain the working of Directional over current relay
(b) What are the different classification of Electromagnetic relays. With neat diagram, explain any four
14. (a) With neat diagram explain the Wattmetric type induction disc relay.
(b) Compare directional and non directional overcurrent relay
(c) Explain about Distance relay

Module-III

15. (a) What is an Amplitude Comparator? Derive the general equation of Amplitude Comparator
(b) With the help of a block diagram, explain the working of a static impedance Relay
16. What are the different Microprocessor based protective relays. Draw the Block schematic and flow charts of
 - (a) Over current relay
 - (b) Directional relay

Module-IV

17. (a) Explain about Buchholz's relay
(b) Explain about the principle of numerical protection
(c) Draw neat sketches illustrating the principle of circulating current differential protection. Indicate the polarities of CT's and direction of currents for internal faults.
18. (a) What are the different abnormalities expected in an alternator? Suggest protection scheme to protect the alternator against these abnormalities.
(b) What do you understand the term Relay coordination ,insulation coordination and BIL.Discuss how BIL helps in the process of insulation coordination