

USN

--	--	--	--	--	--	--	--	--	--

10EE62

Sixth Semester B.E. Degree Examination, June/July 2015

Switchgear and Protection

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Define switchgear, Distinguish between isolating and load breaking switch. (04 Marks)
b. Explain why silver is used as fuse material inspite of its high cost. (06 Marks)
c. With a neat sketch explain the construction and working principle of HRC fuse with tripping device. (10 Marks)
- 2 a. Explain the current interruption in A.C circuit breakers with neat waveforms and define the terms restriking voltage and recovery voltage. (10 Marks)
b. With a neat diagram and necessary waveforms, explain the phenomenon of interruption of capacitive currents in a circuit breaker. (10 Marks)
- 3 a. With a neat sketch explain the construction and working of minimum oil circuit breaker. (10 Marks)
b. With a neat circuit diagram explain the short circuit test layout on circuit breakers. (10 Marks)
- 4 a. Explain the working principle, disadvantages and advantages of horn – gap arrestors. (10 Marks)
b. What are the types of lightning strokes? Explain each of them. (06 Marks)
c. Distinguish between fuse and circuit breaker. (04 Marks)

PART – B

- 5 a. Explain the essential qualities of protective relaying. (10 Marks)
b. With a neat diagram explain the zones of protection in typical power system. (10 Marks)
- 6 a. With a neat sketch, explain the principle of three stepped distance protection of transmission line. (10 Marks)
b. Differentiate between IDMT overcurrent relay and extremely inverse time overcurrent relay characteristics. (04 Marks)
c. Determine the actual time of operation of a 5A, 3seconds overcurrent relay having a current setting of 125% and a time setting multiplier of 0.6 connected to supply circuit through a 400/5 current transformer when the circuit carries a fault current of 4000A. Time of operation is 3.5s for the estimated value of PSM. (06 Marks)
- 7 a. Explain the protection scheme for stator inter turn faults and rotor earth fault of a generator. (10 Marks)
b. Describe the loss of excitation protection in a generator and its characteristics. (10 Marks)
- 8 a. With a neat circuit diagram, explain the Merz – price protection scheme for star – delta transformers. (10 Marks)
b. With a neat circuit diagram explain single phasing preventer used for Induction motor. (10 Marks)

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8=50, will be treated as malpractice.