



**B.E DEGREE EXAMINATIONS: NOV 2015**

(Regulation 2009)

Seventh Semester

**ELECTRICAL AND ELECTRONICS ENGINEERING**

EEE119: Protection & Switch Gear

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-  
PART A (10 x 1 = 10 Marks)**

1. The rating of voltage coil in an electromagnetic relay is generally
  - a) 110 & 220 volts
  - b) 220 & 440 volts
  - c) 1100 & 2200 volts
  - d) 2200 & 3300 volts
2. As compared to an electromagnetic over current relay, the following is not a feature of a static over current relay
  - a) Low burden
  - b) No moving parts
  - c) Fast response
  - d) More transient over-reach
3. The reverse power protection is necessary when the prime mover is
  - a) Steam turbine
  - b) Diesel turbine
  - c) Gas turbine
  - d) Any of the above
4. Bias setting of transformer differential relay cannot avoid mal-operation due to
  - a) External fault
  - b) CT saturation
  - c) CT mismatching
  - d) Over voltage on source side of the transformer
5. The most severe voltage stress occurs across the circuit breakers for
  - a) L-L fault
  - b) L-L-G fault
  - c) L-L-L fault
  - d) L-G fault





of CT's is 250metres. Determine the extra resistance required to be connected in series with the relay to have a stability factor of 3 for this fault condition.

**(OR)**

b) Briefly discuss the problems that arise in the application of differential protection of a power transformer and indicate the solutions employed.

23. a) What is resistance switching? Prove with derivation, that the re-striking voltage can be reduced by incorporating resistance switching in an air-blast circuit breaker.

**(OR)**

b) Discuss about the following factors affecting RRRV, Re-striking voltage and Recovery Voltage

i. Effect of Power Factor of Circuit (4)

ii. Types of faults (10)

24. a) (i) Explain the parallel-current injection method of synthetic testing of a circuit breaker.(7)

(ii) Explain the arrangement to test a circuit breaker for short-line faults. (7)

**(OR)**

b) (i) Write the merits of Air-Blast Circuit Breakers. (7)

(ii) Describe the physical and chemical properties of SF<sub>6</sub> gas. (7)

25. a) What are the limitations of a valve-type lightning arrester? How are these limitations overcome in a gapless metal-oxide lightning arrester?

**(OR)**

b) Giving detailed procedure and reasoning, decide insulation levels of the equipments of a 220kV substation.

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