



Reg. No. :

Name :

Sixth Semester B.Tech. Degree Examination, June 2015
(2008 Scheme)

08.605 : POWER SYSTEM ENGINEERING – II (E)

Time : 3 Hours

Max. Marks : 100

PART – A



Answer **all** questions. **Each** question carries **4** marks.

1. Discuss the possible faults on overhead lines.
2. What is short circuit MVA ? If the full load current corresponding to base KVA is 1684 A and percentage reactance upto fault point is given as 38.89%, calculate short circuit current.
3. How is zero sequence network drawn for an unloaded generator grounded through reactance Z_n ? Also draw the zero sequence network for a star connected load with neutral grounded through Z_n .
4. Derive an expression for fault current in the case of single line to ground fault.
5. Explain briefly the different types of low voltage fuses.
6. Differentiate between primary and backup protection.
7. Explain the working of SF_6 circuit breaker.
8. What is a differential relay ? What are its disadvantages ?
9. Explain the block schematic of a microprocessor based impedance relay.
10. What are the common transformer faults ? Mention the protection systems for transformers.



PART – B

Module – I

11. a) Show how the symmetrical components can be expressed in terms of phase currents in an unbalanced 3 phase system. 10
- b) A 3 phase alternator can supply a maximum load of 5000 KVA at 6600 V. The machine has internal reactance of 6%. Find the reactance per phase of the limiting reactor if the steady apparent power on short circuit is not to exceed 5 times the full load value. 10

OR

12. a) Derive an expression for fault current for a line to line fault by symmetrical components method. 10
- b) A delta connected load is supplied from a 3 phase supply. The fuse in B line is removed and current in the other 2 lines is 20 A. Find the symmetrical components of line currents. 10

Module – II

13. a) Discuss the phenomenon of (1) current chopping (2) capacitive current breaking. What is the significance of resistance switching ? 10
- b) In a short-circuit test on a circuit breaker, the following readings were obtained on single frequency transient : (1) Time to reach peak restriking voltage, 50 microsecond (2) Peak restriking voltage, 100 kV. Determine the average RRRV and frequency of oscillations. 10

OR

14. a) Explain the fundamental requirements of protective relaying. 10
- b) Explain the testing methods of circuit breakers. 10

Module – III

15. a) Explain the differential system of protection of transformers. 10
- b) Explain time-graded overcurrent protection for protection of lines. 10

OR

16. a) Explain distance protection scheme for protection of feeders. 10
- b) What are the advantages of neutral grounding ? Explain the methods of neutral grounding. 10