Reg. No. : ....

Name : ....

Sixth Semester B.Tech. Degree Examination, March 2015
(2008 Scheme)
Branch : ELECTRICAL AND ELECTRONICS
08.605 : Power System Engineering – II
(Special Supplementary)

Time : 3 Hours

Max. Marks : 100

Instruction : *Answer all questions from Part A and one full question from each Module of Part B.*

PART – A

1. List the various types of faults that occur in power system.

2. For faults on transmission lines a 3 phase fault is more severe than other faults. Why ?

3. Describe the process of current chopping.

4. Explain

   1) Restriking voltage

   2) Recovery voltage.

5. Distinguish between primary and back up protection.

6. Discuss the advantages of SF_6 circuit breakers over oil circuit breakers.

7. Explain the principle of operation of HVDC circuit breaker.

8. Give the block schematic diagram of over current relay.

9. Explain the differential current protection of a bus-zone.

10. What are the abnormal conditions in a large alternator against which protection is necessary ?

(10×4= 40 Marks)

PART – B

Answer **any one** full question from **each** Module.

Module – I

11. a) Derive an expression to find the fault current when a double line to ground fault occurs on the terminals of an unloaded alternator with neutral solidly grounded. Draw the sequence networks for the case. 10

    b) A set of unbalanced line currents in a 3ϕ, 4 wire system is as follows

    $I_a = -j6A$

    $I_b = -8 + j5$

    $I_c = 7A$

    Determine the zero, +ve and –ve sequence components of the current. 10

    OR

12. a) What are current limiting reactors? Explain the different types of current limiting reactors used in power system. 10

    b) A generating station having n section busbars each rated at XKVA with p% reactance is connected on the tie bars system through busbar reactances of q%. Determine the short circuit kVA if a 3-phase fault takes place on one section. Determine the short circuit kVA when n is very large. 10

Module – II

13. a) Explain with neat sketches the construction and working of a typical oil circuit breaker. 10

    b) In a 132 kV system, the reactance per phase upto the location of the circuit breaker is 5Ω and capacitance to earth is $0.03\,\mu F$. Calculate
    a) the maximum value of restriking voltage.
    b) the maximum value of RRRV.
    c) frequency of transient oscillation. 10

    OR

14. Write short notes on :
    i) Percentage differential relays   10
    ii) H.R.C. Cambridge fuse.   10

Module – III

15. a) Describe the protection schemes used for protection of stator of generators.   10

    b) Write notes on Bucholz's relay.   10

    OR

16. a) Describe the Merz-Price circulating current system for the protection of transformers.   10

    b) Explain microprocessor based protective relays.   10

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