Total No. of Questions :5] *[Total No. of Printed Pages :2*

Roll No .....

EX - 802

B.E. VIII Semester

Examination, June 2016

Computer Application to Power System

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Define the following terms with suitable example:
i) Tree ii) Branches
iii) Co-tree
b) What is meant by network model using graph theory?
c) Why nodal analysis is preferred over mesh analysis in power system?
d) Discuss the algorithm for formulating Z_{BUS} matrix of system.

OR

Explain loadability of transmission line along with loadability curve.

2. a) What are the different classical methods for voltage control in power system network?
b) How the on load tap changing transformers regulate bus voltage?
c) Distinguish between shunt and series compensation.
d) What is a static compensator? Explain with neat diagrams, working principle of various types of the static compensators.

OR

Describe uniform series and shunt compensation and effect on the loadability of transmission lines.

3. a) Derive general sensitivity relations for sensitivity analysis in power system
b) Discuss the sensitivity factors significance in power system security analysis.
c) Describe the importance of sensitivity associated with voltage var in power system under heavily loaded condition.
d) Explain the sensitivity relating load bus changes in terms of PV bus voltage changes in six-bus power system.

OR

Describe line outage distribution factors and compensated shift factors.

4. a) Explain major functions of power system security.
b) Compare the concepts of pre-contingency and post-contingency analysis.
c) Enumerate power system static security levels.
d) Describe economic dispatch problem using linear programming with a flow chart.

OR

Draw a flow chart for contingency analysis using a simple technique.

5. a) What are P-V and Q-V curves?
b) Explain in brief the concept of power system voltage stability.
c) Rotor angle stability is associated with transmission network where as voltage stability is associated with load. Explain.
d) Discuss briefly how the following components of power system affect voltage stability of the system:
i) Transformer ii) Induction motor
iii) Feeder iv) Voltage reduction
v) Generation in load area

OR

Describe the effects of series and shunt compensation on voltage stability of power system.

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