

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.

- 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.