

Roll No.

Total No. of Questions : 9]

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Paper ID [A0429]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 7th / 8th)

COMPUTER AIDED POWER SYSTEM ANALYSIS (EE - 402)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

Q1)

(10 x 2 = 20)

- a) Define Load bus and give its importance.
- b) List the factors that affect transient stability.
- c) Give significance of dynamic stability.
- d) State importance of automatic voltage regulator.
- e) Give applications and limitations of equal area criterion.
- f) State drawbacks of newton raphson method.
- g) State importance of penalty factor.
- h) Give criterion for selection of breakers.
- i) State significance of positive and zero sequence components.
- j) Define short circuit capacity of a bus.

Section - B

(4 x 5 = 20)

- Q2) Explain the per unit (p.u.) system of analyzing power system problems. Discuss the advantages of this method over the absolute method of analysis.
- Q3) Write short note on the reactances of an alternator when sudden 3-phase short circuit occurs on its terminals.
- Q4) Prove that in bus admittance matrix, each diagonal element is equal to the sum of all admittances connected at node i and off diagonal element is equal to negative of admittance connected between node i and j .
- Q5) Formulate the mathematical model for load flow analysis of a power system using Gauss-Siedal method.
- Q6) Define the terms - steady state and transient stabilities. Explain the various techniques for improving transient stability.

Section - C

(2 x 10 = 20)

- Q7) Discuss Z_{BUS} building algorithm in detail. How can the Z_{BUS} matrix be updated, if any line is removed from the previously existing network, or the impedance value of existing line gets modified. Include the effect of mutual coupling also.
- Q8) Discuss point by point method for solving swing equation for transient stability analysis of a power system.
- Q9) Write short notes on any two of the following:
- Equal area criterion of stability.
 - Fast decoupled method for load flow studies.
 - Symmetrical components and its application to LLG fault problem.

