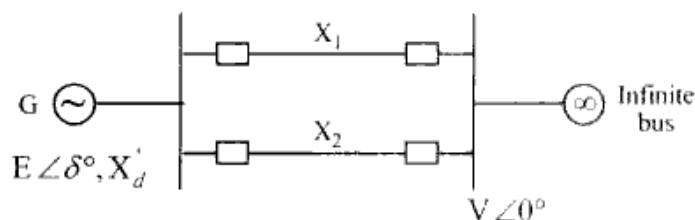c) How to improve the transient stability limit of power system? Discuss. rgpvonline.com

d) Develop an algorithm of Runge-Kutta method for the solution of swing equation and compare it with other techniques.

OR

Consider the system shown in figure.

$X_d' = 0.25$ pu

$|E| = 1.25$ pu

$|V| = 1.00$ pu

$X_1 = X_2 = 0.4$ pu

Initially the system is operating stable while delivering a load of 1.25 pu. Determine the stability of the system when one of the lines is switched off due to a fault.

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Roll No ....

EX - 701
B.E. VII Semester
Examination, December 2015
Power System - II

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) What is meant by deregulation? rgpvonline.com

   b) Enumerate the need for restructuring of power systems.

   c) What are the major classification in congestion management?

   d) Explain to calculate available transfer capacities using ac power flow analysis.

OR

What is distributed generation? Explain utility and customer benefits of using distributed generation.

2. a) What is load flow analysis? Give its significance in power system analysis.

b) Why bus admittance matrix is used in power flow analysis instead of bus impedance matrix?

c) Compare GSM, NRM and FDPF methods with respect to number of iterations taken for convergence and memory requirement.

d) The fuel inputs per hour of plant 1 and 2 are given as:

$F_1 = 0.2 P_1^2 + 40 P_1 + 120$ Rs./hr.

$F_2 = 0.25 P_2^2 + 30 P_2 + 150$ Rs./hr.

Determine the economic operating schedule and the corresponding cost of generation if the maximum and minimum loading on each unit is 100 MW and 25 MW. Assume the transmission losses are ignored and the total demand is 180 MW. Also determine the saving obtained if the load is equally shared by both the units.

OR

With neat flow chart explain the computational procedure for load flow solution using fast decoupled method when the system contains all types of buses.

3. a) What is meant by load frequency control?

b) What do you understand by coherent group of generators?

c) List the advantages of multiarea operation.

d) Derive the expression for steady state frequency change for single area system with following cases:

i) Changes in load with fixed speed

ii) Changes in speed with fixed demand.

Contd...

OR

For a two identical area system the following data is given. Determine the frequency of oscillations when a step load disturbance occurs.

Speed regulation coefficient = 4 Hz/pu MW

Damping coefficient = 0.03 pu MW/Hz

System frequency = 50 Hz

The tie line has capacity of 0.1 per

The power angle is 30° just before the occurrence of the load disturbance.

4. a) What are the various methods of voltage control in transmission system?

b) State the difference between P-f and Q-V controls.

c) State and explain in brief the generators and consumers of reactive power in a power system.

d) Draw the circuit for a typical excitation system and derive the transfer function model.

OR

With the help of a suitable diagram, explain the working of an automatic voltage regulator.

5. a) Define steady state, dynamic and transient stability.

b) What are the assumptions made in solving swing equation? Justify.