c) What is meant by swing curve? Explain with diagram.

d) Describe the modified Eulers method for analysis of transient stability of power system.

OR

A two pole, 50 MVA, 11kV generator is supplying full load at 0.8 power factor lagging. If the inertia constant of the moving parts of the generator is 6.0 MJ/MVA, calculate the energy stored when the generator is running at the synchronous speed of 300 rpm. If the net input to the generator is suddenly increased to 62000 metric HP, calculate the acceleration product.

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B.E. VII Semester

Examination, December 2016

Power System Analysis and Control

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 questions 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.

Unit - I

1. a) What are the problems associated with long distance power transmission?

b) Explain Distributed generation system.

c) What do you mean by congestion in power networks? Explain how congestion can be relieved.

d) Explain the available transfer capability of power system. Also explain its main components which is used for calculation of ATC.

OR

Explain Deregulation in power system and why its is necessary.

Unit - II

2. a) What is the difference between Z_{bus} and Y_{bus}?

b) What is decoupled load flow method?

c) Explain the terms bus incidence matrix primitive network.

d) Develop the algorithm for load flow solution using Newton Raphson method.

OR

A power system consists of two, 120 MW units whose input cost data are represented by the equation:

$$C_1 = 0.04\ P_1^2 + 22\ P_1 + 800\ Rs./hour$$

$$C_2 = 0.04\ P_2^2 + 22\ P_2 + 1000\ Rs./hour$$

If the total received power $P_R = 200$ MW. Determine the load sharing units for most economic operation.

Unit - III

3. a) Why the constant frequency is necessary in power system?

b) What are the load frequency problem?

c) Distinguish between load frequency control and economic dispatch control.

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Contd...

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d) With a block diagram explain the load frequency control for a single area system.

OR

Explain the speed governing system with its proper diagram.

Unit - IV

4. a) What is the difference between control strategy of MVAR-Voltage and MW - Frequency control?

b) Why is voltage control required in power system?

c) How series and shunt capacitors can minimise the voltage drop in the line? Explain.

d) Develop the model for automatic voltage control system in generating station.

OR

Discuss various types of excitation systems and develop the model of an general excitation system.

Unit - V

5. a) Define the terms.

   i) Steady state stability.

   ii) Transient stability.

b) How does auto-reclosing of circuit breakers affect stability of the transmission system?

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