13302 : Power System Dynamics : 1 SEPS 4

P. Pages : 1

Time : Three Hours

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AW - 3955

Max. Marks : 80

Notes :
1. Answer **two** question from Section A and **two** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Draw and explain the phasor diagram of synchronous Generator under transient condition. **10**

   b) Transform the stator currents from phases a, b, c into new variables along d, q, 0 axis, using Park's transformation & hence prove that this transformation is power invariant. **10**

2. a) Explain equal area criterion for transient stability analysis. Also obtain the expression for determination of critical clearing angle & Critical clearing time for a system with one m/c connected to infinite bus through two parallel lines & fault occurs at one end of line. **10**

   b) Explain the classical model of single m/c connected to an infinite bus. **10**

3. a) Explain synchronizing power coefficients of synchronous machine. **10**

   b) Explain the various reactance's & time constants from the d-axis equivalent circuit of a three phase synchronous machine. **10**

SECTION – B

4. a) Explain the meaning of short circuit ratio (SCR). State its effect on SSSL. Also show that SCR is inversely proportional to synchronous reactance. **8**

   b) Explain the effect of saliency on SSSL. **6**

   c) Explain static excitation system with neat diagram. **6**

5. a) Obtain the condition for stability of system using linearised generator model when demagnetisation effect of an armature reaction is considered. **8**

   b) Describe the use of supplementary stabilizing signals. **6**

   c) Explain the effect of excitation on dynamic stability. **6**

6. a) Describe the procedure to calculate SSSL of a loss less two m/c system using clarke diagram. **10**

   b) Derive the expression for modes of oscillations of an unregulated multimachine system. **10**

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