Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech(EE)/SEM-2/MPS-041/2011

2011

POWER SYSTEM ANALYSIS-II

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions. 5 × 14 = 70

1. What are the compensating devices used for the improvement of voltage stability ? How do they work ?

2. Find the expression for critical receiving end voltage and critical power angle at voltage stability limit for a two-bus power system.

3. What is critical clearing angle ? What is its mathematical expression ? What do you mean by critical clearing time ? How can you find the critical clearing time for a generator subject to a transient fault ?

4. What are the methods of improving transient stability ? Briefly explain the methods. Derive an expression for assessment of small signal stability of a multi-area system and with presence of dynamic devices in load buses.

5. Write short notes on the following :

   a) PSS

   b) Effect of on-line Tap Changer Transformer on Voltage Stability

   c) Determination of voltage stability by QV curve.

6. For a system shown in figure, the numerical values for different quantities are : $E = 1{\cdot}2\ pu$, $V = 1\ pu$, $X_d = 0{\cdot}2\ pu$, $X_1 = X_2 = 0{\cdot}4\ pu$. Initially the generator was delivering a power of 1.5 pu. If one of the double circuit lines is now tripped out, using equal area criteria determine whether the system would be able to maintain its stability. If the stability is maintained, determine the maximum value of δ attained by generator.