[Total No. of Questions - 8] [Total No. of Printed Pages - 2]
(2124)

1633

M. Tech 1st Semester Examination

Power System Dynamics

EE1-515

Time : 3 Hours Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt any five questions.

1. Classify electromagnetic transients. Differentiate between steady state and transient stability. What factors and considerations make transient stability analysis different from steady state stability? (20)

2. Derive the expression for active and reactive power on the basis of two-axis model for salient pole machine when resistance is neglected. (20)

3. List types of excitation systems and draw their block diagrams along with their characteristics. (20)

4. Draw and explain the characteristics of nonlinear elements in multi-machine system. (20)

5. Derive simplest model of synchronous machine incorporating the effect of saliency. (20)

6. For a machine connected to infinite bus, derive expression for equal area criterion. Through equal area criterion explain the stability of machine connected to infinite bus when its mechanical input is increased. (20)

[P.T.O.]

7. Derive swing equation for the dynamics of the rotor. Through related curves and graphs explain its point-by-point solution and assumptions made for this kind of approximate solution. (20)

8. Write short note on any two of the followings:

   (a) Synchronous machine representation for stability.

   (b) Characteristic of generator at asynchronous speed.

   (c) Effect of induced currents in field winding. (10×2=20)