

Total No. of Questions :6]

SEAT No. :

P5156

[Total No. of Pages : 2

B.E./Insem.-561
B.E.(Electrical) (Semester - I)
POWER SYSTEM OPERATION & CONTROL
(2012 Pattern)

Time : 1 Hour]

[Max. Marks :30

Instructions to the candidates:

- 1) *Solve three questions Q.1 or Q.2, Q3. Q4., Q5. or Q6.*
- 2) *Figures to the right indicate full marks.*
- 3) *Assume suitable data if necessary.*
- 4) *Use of electronic calculator is allowed.*

- Q1)** a) Obtain the swing equation of synchronous machine. [5]
b) Define the critical clearing angle and critical clearing time for power system stability. Obtain the expression for critical clearing time in terms of critical clearing angle. [5]

OR

- Q2)** a) Explain the equal area criterion of transient stability studies for sudden rise in mechanical input. [6]
b) State and explain methods to improve stability of the power system.[4]
- Q3)** a) What is the necessity of reactive power control? Discuss the various sources of reactive power. [5]
b) Discuss the problems associated with the series compensation. [5]

OR

- Q4)** a) Draw and explain the loading capability curve of a synchronous generator. [6]
b) Compare synchronous condenser with static capacitor in context with reactive power management. [4]

P.T.O.

- Q5)** a) State various types of FACTS controllers used for reactive power control and discuss any one type. [5]
- b) Explain the STATCOM [5]

OR

Q6) Write short note on following:

- a) Explain principle of operation of SVC. [5]
- b) Explain TCSC in details with different operating modes. [5]

