Total No. of Questions :6]

SEAT No. :

P216

[Total No. of Pages : 2

Oct./BE/Insem. - 532
B. E. (Electrical)
POWER SYSTEM OPERATION AND CONTROL
(2015 Course) (Semester - I)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Solve three questions Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.***
2) ***Black figures to right indicate full marks.***
3) ***Assume suitable data if necessary.***
4) ***Use of electronic calculator is allowed.***

Q1) a) Explain the effect of clearing time on stability. Consider the case of three phase short circuit fault at the outgoing radial feeder connected to generator bus. Derive the expression of critical clearing angle. **[5]**

b) A 3-ph alternator having E=1.2 pu, $X'd$=0.2 pu delivers 1.5 pu power to infinite bus with V=1 puthrough the two parallel transmission lines having reactances $X_1 = X_2$=0.4 pu. If 3-ph fault takes place at middle point of second line, find critical clearing angle. **[5]**

OR

Q2) a) Explain the solution of swing equation by point by point method. **[5]**

b) Elaborate equal area criterion of transient stability analysis, for a case of sudden rise in mechanical input. **[5]**

Q3) a) Explain the synchronous motor as a reactive power compensator. **[5]**

b) What is series compensation? State its advantages and disadvantages. **[5]**

OR

Q4) a) What is the necessity of reactive power control? Discuss the various sources of reactive power. **[5]**

b) Sketch and explain the loading capability curve of synchronous generator. **[5]**

P.T.O.

Q5) a) With diagram, explain the working of SVC **[5]**

b) With diagram, explain working of Thyristor Controlled Series Capacitor [TCSC] **[5]**

OR

Q6) a) Explain working of STATCOM with diagram. **[5]**

b) Explain unified power flow controller [UPFC] along with phasor diagram. **[5]**