

Total No. of Questions : 8]

SEAT No. :

P3080

[Total No. of Pages : 2

[5670]-181
B.E. (Electrical)
Power System Operation & Control
(2012 Pattern)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Use of non-programmable scientific calculators is allowed.*
- 5) *Assume suitable data if necessary.*

- Q1)** a) What is swing curve? State and explain the stability criterion for transient stability using swing curve. [6]
b) What is Sub synchronous resonance? Explain its causes and effects. [7]
c) Discuss the Problems of AC transmission system. [7]

OR

- Q2)** a) Discuss the necessity of reactive power control in power systems. Explain the various sources of reactive power. [6]
b) A 50 Hz alternator delivers 1 pu power to infinite bus through transmission line. When fault takes place, maximum power transferable is reduced to 0.5 pu. Before the fault it was 2 pu and after clearance of the fault it is 1.5 pu. Determine critical angle by the use of equal area criteria. [7]
c) Explain various types of FACTS controllers used for reactive power control. [7]

- Q3)** a) With complete block diagram explain proportional plus integral load frequency control along with dynamic response of the system. [8]
b) Obtain the complete block diagram of load frequency control of an isolated power system. [10]

OR

- Q4)** a) A 100 MVA, 50 Hz alternator while operating at rated speed, load is suddenly increased by 20 MW. Due to lag in governor system, there is delay in opening of steam valve by 0.5 sec. Find frequency deviation. Assume inertia constant of machine 5 kJ/kVA. [8]
b) Explain with the block diagram representation, the two area load frequency control. [10]

P.T.O.

- Q5)** a) Discuss economic scheduling of thermal plant considering effect of transmission losses. [8]
b) Explain priority list method used for Unit Commitment. [8]

OR

- Q6)** a) Discuss hydro constraints and thermal constraints used for unit commitment. [8]
b) Explain dynamic programming method used for Unit Commitment. [8]

- Q7)** a) Discuss advantages of interconnected power system. Explain economy Inter change between interconnected utilities. [8]
b) State and explain, customer oriented and energy based reliability indices. [8]

OR

- Q8)** a) Explain the following : [8]
i) Power pools
ii) Emergency power interchange
b) Explain the Reliability evaluation of Generation system with - [8]
i) Generation Model
ii) Load Model used and
iii) The Risk Model

