P3306

SEAT No. :

[5670]-575

B.E. (Electrical)
POWER SYSTEM OPERATION & CONTROL
(2015 Pattern) (Semester-I) (403141)

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., Q.9 or Q.10.*
2) *Neat Diagrams must be drawn whenever necessary.*
3) *Figure to right indicate full marks.*
4) *Use of Non-Programmable Scientific calculators is allowed.*
5) *Assume Suitable Data if necessary.*

Q1) a) Discuss the concept of critical clearing angle and critical clearing time and explain the effect of clearing time on stability of power system. **[4]**

b) Explain the working of TCSC with its characteristics. **[6]**

OR

Q2) a) Describe sub synchronous resonance. Explain its causes and effects **[4]**

b) Discuss the methods of improving the steady state and transient stability. **[6]**

Q3) a) Explain the working of synchronous condenser as a reactive power compensator. **[4]**

b) Derive the swing equation of synchronous machine **[6]**

OR

Q4) a) Explain the problems associated with series compensation. **[4]**

b) Discuss various ways of providing shunt compensation. **[6]**

Q5) a) Explain automatic generation control, its necessity. What is free governor mode operation and why is this mode preferred. **[8]**

b) Sketch and explain the steady state response of frequency as a function of load for load frequency control of single area case. **[10]**

OR

P.T.O.

Q6) a) Develop schematic diagram and explain speed governor system of turbo generator **[8]**

b) Obtain the generator model, turbine model and power system model of load frequency control single area case. Draw the complete block diagram of proportional plus integral load frequency control of single area case.

[10]

Q7) a) Discuss the use of Lagrange multiplier technique to solve economic load dispatch problem without including transmission loss and with no generator limits. **[8]**

b) Discuss procedure of load dispatch at state load dispatch centre and regional load dispatch centre. **[8]**

OR

Q8) a) Explain the dynamic programming method used for unit commitment. **[8]**

b) With illustration explain the priority list method **[8]**

Q9) a) What are the criteria of applying capacity interchange, diversity interchange, inadvertent interchange between interconnected utilities **[8]**

b) Discuss the Reliability evaluation of Generation system with--- **[8]**

    i) Generation model

    ii) Load Model used and

    iii) The Risk Model

OR

Q10)a) Explain the following. **[8]**

    i) Energy banking.

    ii) Emergency power interchange.

b) Describe the following reliability Indices **[8]**

    i) Loss of load probability (LOLP)

    ii) Expected Energy Not Supplied (EENS)

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