22632

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

(a) Explain why the consumer demand constant frequency supply.

(b) State the difference between generator bus and slack bus.

(c) List the methods of voltage control using transformer.

(d) Draw the load frequency control refer to single area case.

(e) List the data required for load flow studies.

(f) Draw a neat labelled schematic diagram for alternator voltage control system.

(g) State the location of center load dispatch centre & its backup centre in India.

2. Attempt any THREE of the following : **12**

(a) Describe Automatic Voltage Control. What is the function of Automatic Voltage Regulator ?

(b) Illustrate significance of load forecasting in Power System Operation.

(c) Explain the turbine speed governing system with the help of diagram.

(d) Define bus. Explain the classification of bus.

3. Attempt any THREE of the following : **12**

(a) Explain methods of improving steady state stability condition.

(b) Explain the characteristics of Y_{bus} matrix.

(c) Define steady state stability and Transient stability.

(d) List out environmental & social factors to be considered in load forecasting in power system operation.

4. Attempt any THREE of the following : **12**

(a) Write down at least four major functions of load dispatch center.

(b) Explain steady state stability condition with the help of power angle diagram for power system.

(c) State and explain the term bus loading and line flow equation.

(d) Draw schematic diagram of turbo generator speed control.

(e) State the concept of reactive power compensation. Name any two reactive power compensating equipments.

5. Attempt any TWO of the following : **12**

(a) Derive the expression for maximum power flow under steady state condition.

(b) Discuss the relationship between real power and frequency for a simple two bus.

(c) Determine the Y_{bus} admittance matrix for the power system with following details :

Bus	**Z_{line} in P.U.**	**Charging admittance in P.U.**
1 – 2	0.2 + j0.85	j0.02
2 – 3	0.3 + j0.88	j0.03
1 – 3	0.25 + j1.15	j0.04

6. Attempt any TWO of the following : **12**

(a) With diagram, derive the line flow equation for 2-bus system.

$I_{bus} = Y_{bus} – V_{bus}$.

(b) With reference to Indian Power supply, state the types of load dispatch centre and their location.

(c) Explain three methods that can be adopted for the improvement of transient stability condition of a power system.
