23242

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

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

(2) Answer each next main Question on a new page.

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

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

Marks

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

(a) State the concept of reactive power balance.

(b) Suggest type of reactive power compensation equipment for the transmission line of power system (any **two** type).

(c) Define load flow studies referred to power system operation.

(d) State any two characteristics of 'SLFE'.

(e) Define the terms :

(i) Steady state stability

(ii) Dynamic stability

(f) State adverse effects of instability of power system (any **two** points).

(g) Define Load Shedding.

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

(a) Explain the need of constant frequency control.

(b) Draw schematic diagram of automatic load frequency control.

(c) List out the information that can be collected from load flow analysis.

(d) Derive $I_{bus} = Y_{bus} \cdot V_{bus}$ for a two bus power system.

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

(a) State the necessity of voltage control in Power System Operation.

(b) Draw a labelled schematic diagram of Automatic Voltage Control (AVC) used for an alternator.

(c) Identify the significance of load flow analysis for power system.

(d) Differentiate between Large disturbance and Small disturbance in power system stability.

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

(a) State the characteristics of Y_{bus} matrix.

(b) Derive Y_{bus} for following system :

Bus	**Line Impedance**	**Charging Admittance (pu)**
1 – 2	0.2 + j 0.8	j 0.002
2 – 3	0.3 + j 0.9	j 0.003
1 – 3	0.25 + j 1.0	j 0.04

(c) Explain steady state stability of the power system.

(d) Describe transient stability with the help of power angle curve.

(e) Describe the necessity of load forecasting.

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

(a) Explain the shunt compensation and series compensation method of reactive power compensation for transmission line.

(b) Describe the working of Turbine Speed Governing System for turbo generator speed control with a labelled schematic diagram.

(c) Explain methods of improving steady state stability conditions.

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

(a) Describe the functioning of state load dispatch centre in Indian power system.

(b) (i) State the significance of load flow analysis in a power system.

(ii) State the data required for load flow studies related to

(1) Transformer

(2) Bus

(c) Explain the various factors that affect load forecasting.
