Total No. of Questions : 5] [Total No. of Printed Pages : 3

Roll No. .....

EX–701

B. E. (Seventh Semester)
EXAMINATION, Dec., 2011

(Electrical & Electronics Engg. Branch)

POWER SYSTEM – II

(EX – 701)

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt any *two* parts from each question. All questions carry equal marks.

1. (a) Explain the Newton-Raphson method of load flow studies. 10

   (b) Consider a three-bus system in which each of the three lines has a series impedance of $0{\cdot}02 + j\,0{\cdot}08$ p. u. and a total shunt admittance of $j\,0{\cdot}02$ p. u. The specified quantities at the buses are tabulated below : 10

Bus No.	P_D	Q_D	P_G	Q_G	V
1	2·0	1·0	US	US	$V_1 = 1{\cdot}04$
2	0·0	0·0	0·5	1·0	US
3	1·5	0·6	0·0	Q = ?	$V_3 = 1{\cdot}04$

   P_D and Q_D → real and reactive power demand.

   P_G and Q_G → real and reactive power generation

   US → unspecified

(c) Explain the method of determining the distribution of given load among the two plants for most economic generation. 10

2. (a) What are the advantages of interconnections ? Explain the concept of 'single area interconnected system' and 'multi area interconnected system'. 10

(b) Discuss the following as applied to load frequency control : 10

(i) Load damping

(ii) Speed regulation

(c) Explain briefly the tie line frequency control. 10

3. (a) What are the requirements of a good voltage regulator ? How does it help in the improvement of system stability ? 10

(b) Explain the significance of the following terms : 10

(i) Static frequency drop

(ii) Control area

(c) Draw and explain the transfer function representation of turbine-governor control system. 10

4. (a) Explain the "equal area criteria" for transient stability analysis. Also mention its limitation. 10

(b) A 50 Hz, 4-pole alternator rated 20 MVA, 13·2 kV has an inertia constant of H = 9 kW sec/kVA. Find the kinetic energy stored in the rotor at synchronous speed. Find the acceleration if the input less the

(c) Discuss methods for increasing the steady state stability limit of a power system. 10

5. Write short notes on any *two* of the following : 10 each

(a) Energy pricing

(b) Power system restructuring

(c) Interconnected power system

(d) Congestion in power system