No. of Printed Pages : **3**

BIEEE-007

B.Tech. ELECTRICAL ENGINEERING
BTELVI

Term-End Examination

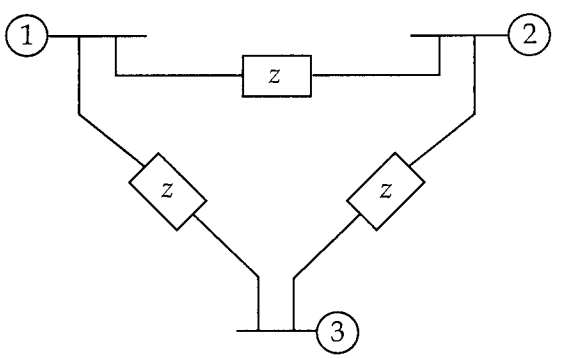
June, 2013

BIEEE-007 : COMPUTER APPLICATIONS IN P.S.

Time : 3 Hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry **equal** marks. Assume missing data, if any.*

1. Form (Z_{BUS}) matrix of the Network shown in (fig.1) using (Z_{BUS}) building algorithm. **10**



(Fig. 1)

Each line has Impedance of (0.06 + j0.5) p.u.

2. For a Power System, $[Z_{BUS}]$ is give as : **10**

$$[Z_{BUS}] = \begin{array}{c} \\ ① \\ ② \\ ③ \\ ④ \end{array} \begin{array}{c} \begin{array}{cccc} ① & ② & ③ & ④ \end{array} \\ \begin{bmatrix} j0.25 & j0.20 & j0.16 & j0.14 \\ j0.20 & j0.23 & j0.15 & j0.15 \\ j0.16 & j0.15 & j0.20 & j0.12 \\ j0.14 & j0.15 & j0.12 & j0.20 \end{bmatrix} \end{array} \text{ p.u.}$$

Assume $U_g = 0.98\angle 0°$ p.u., $V_3 = 0.975\ \angle 0°$.p.u;. $V_4 = 0.99\angle 0°$.p.u. If two lines Z_x and Z_y of p.u. reactances j0.05 and j0.06 be connected between bus $2-3$ and $3-4$ respectively. Find currents I_x and I_y flowing through Z_x and Z_y.

3. What are current injection distribution factor and line outage distribution factor ? How are they used in contingency analysis ? **10**

4. Explain clearly with a flow chart of the computational procedure for load flow solutions using Newton - Raphson method when the system contains all types of buses. **10**

5. Develop load flow equations suitable for solution by : **10**

   (a) Gauss Seidel method

   (b) Newton - Raphson method, using nodal admittance approach.

6. Explain the fundamental Cut - Set Matrix by taking an example. 10

7. Explain the concept of decoupled methods with reference to Load flow studies. 10

8. Write an algorithm for finding Bus - Impedance matrix in a power system network. 10

9. Write short note on ***any two*** of the following : 2x5=10
   (a) Tap-Changing Transformer
   (b) Representation of Transmission-lines
   (c) Multifort representation of a power system