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BIEEE-007

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B.Tech. ELECTRICAL ENGINEERING
BTELVI

Term-End Examination

December, 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. (a) List the limitations of Gauss-Seidel method and Newton Raphson method. 5

   (b) What are the advantages of Y_{BUS} over Z_{BUS} ? 5

2. (a) What do you understand by linear sensitivity factor ? How they are implemented in Contingency Analysis ? 5

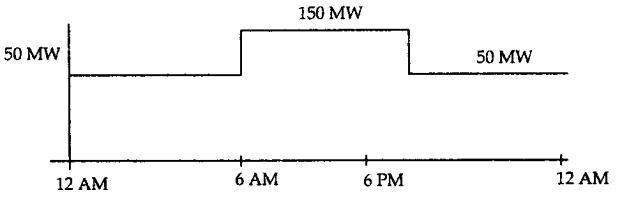
   (b) How contingency selection takes place ? Explain its procedure. 5

3. Define incidence matrix, cutset matrix, loop matrix. List the power system components and explain their importance. 10

4. Assume that the fuel input in Btu per hour for units 1 and 2 are given by : **10**

$F_1 = (8P_1 + 0.024P_1^2 + 80)10^6$

$F_2 = (6P_2 + 0.04P_2^2 + 120)10^6$ The maximum and minimum loads on the units are 100 MW and 10 MW respectively. Determine the minimum cost of generation when the following load is supplied.



The cost of fuel is Rs. 2 per million Btu.

5. (a) What is the role of digital computers in power system ? **5**

(b) What is the significance of load flow analysis in power system ? **5**

6. Draw and explain the single line diagram of a distribution system according to the Indian standard representation of components. **10**

7. (a) Explain tie line bias control for multi area power system. **5**

(b) Derive the conditions to be satisfied for economic operation of a lossless power system. **5**

8. Explain in detail how the quality and reliability of power gets improved by de regulation. **10**

9. A two-bus system is shown in the figure given below. If a load of 125 MW is transmitted from plant 1 to the load, a loss of 15.625 MW is incursed. Determine the generation schedule and the load demand if the cost of received power is Rs. 24/MW hr. Solve the problem using co-ordination equations and the penalty factor method approach. The incremental production costs of the plants are $\frac{dF_1}{dP_1} = 0.025P_1+15$ **10**

$\frac{dF_2}{dP_2}=0.05P_2+20$