B.Tech IV Year I Semester (R07) Supplementary Examinations December 2015

POWER SYSTEM ANALYSIS

(Electrical & Electronics Engineering)

(For 2008 Regular admitted batch only)

Time: 3 hours Max. Marks: 80

Answer any FIVE questions

All questions carry equal marks

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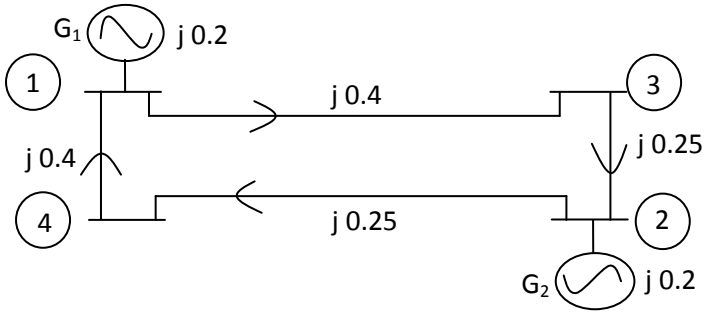
1 (a) Define tree, co-tree, basic loop, and basic cut set with suitable examples.

(b) Form the Y_{BUS} by using singular transformation for the network shown in below figure.



2 A transmission line exists between buses 1 and 2 with per unit impedance 0.4. Another line of impedance 0.2 p.u. is connected in parallel with it making it a double circuit line with mutual impedance of 0.1 p.u. Obtain the impedance of two-circuit system by building algorithm method.

3 (a) Discuss briefly the bus classification.

(b) Define acceleration factor.

(c) Explain Gauss-Seidel method of load flow solution.

4 (a) Discuss briefly Sparsity of network admittance matrices.

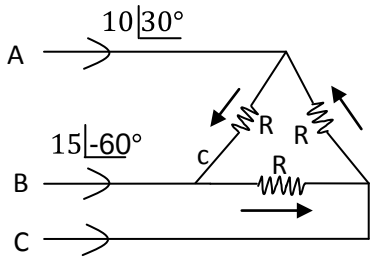
(b) Discuss the rectangular-coordinates method of Newton-Raphson load flow solution.

5 (a) Discuss briefly the importance of short circuit currents and series reactors.

(b) The short circuit MVA at the bus bars for a power plant A is 1200 MVA and for another plant B is 1000 MVA at 33 kV. If these two are to be interconnected by a tie-line with reactance 1.2 Ω. Evaluate the possible short circuit MVA at both the plants.

6 (a) Discuss briefly about positive, negative and zero sequence networks.

(b) A delta connected balanced resistive load is connected across an unbalanced three phase supply as shown in below figure. Currents in lines A and B are specified, find the symmetrical components of line currents and also find the symmetrical components of delta currents.



7 (a) Define and discuss steady state, dynamic and transient stabilities.

(b) Discuss about power angle curve and determination of steady state stability.

8 (a) Discuss briefly various factors affecting transient stability.

(b) Explain in detail about the various applications of equal area criterion.

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