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Question Paper Code: 35033

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fifth Semester

Electrical and Electronics Engineering

01UEE503 – POWER SYSTEM ANALYSIS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

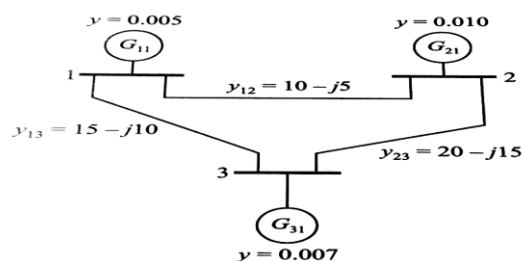
Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What are the advantages of per phase analysis in power system?
2. Write the expression for determining base impedance.
3. Mention the advantages of Gauss-Seidel method of load flow analysis.
4. Differentiate generator bus and slack bus.
5. What are the causes for faults in power system?
6. Define short circuit capacity.
7. Show that neutral current is zero in balanced three phase circuit.
8. What are the properties of sequence operator 'a'?
9. Suggest any two ways to improve transient stability of a power system.
10. What is the use of swing curve?

PART - B (5 x 16 = 80 Marks)

11. (a) Determine the $[Y_{bus}]$ matrix of the representative power system shown in figure. (16)



Or

- (b) Two generators rated at $10MVA, 13.2KV$ and $20MVA, 13.2KV$ are connected in parallel to a bus bar. Two motors of input $8MVA, 12.5KV$ and $12MVA, 12.5KV$ are drawn supply from bus bar. Take $x_g'' = 15\%$ and $x_m'' = 20\%$. Draw the single line diagram and calculate the new P.U. impedance for the power system components. Assume generator1 rating as base quantities. (16)

12. (a) Write the algorithm and flow chart of the FDLF method. (16)

Or

- (b) Construct an algorithm using Gauss-Seidal method to determine load flow solution for a power system network with PQ buses alone. (16)

13. (a) Write the steps for the fault calculation of an n bus system using bus impedance matrix. (16)

Or

- (b) Construct the positive sequence, negative sequence and zero sequence impedance networks of a transformer using the concept of symmetrical components. (16)

14. (a) Derive the equation of fault current for an L-L fault in power system. (16)

Or

- (b) Explain the sequence networks and sequence impedance for an unbalanced generator and transmission lines. (16)

15. (a) Derive the equation for critical clearing angle determination. (16)

Or

- (b) Illustrate the concept of equal area criterion and its applications. (16)
