Experiment 6

Aim: To find line parameters of transmission line using MATLAB.

Develop program in MATLAB to determine

1) GMRL and GMRC for a composite conductor having 7 identical strands of radius 'r' each.
2) GMRL and GMRC of bundle conductor having bundle spacing of 'd' having total number of conductor 2, 3 (equilateral triangle configuration) or 4 (square configuration) each of radius 'r'.
3) Develop program in MATLAB to determine line constants L and C for an overhead 3- phase general transmission line considering following options:
    I. Type of conductor
        1. Single conductor
        2. Bundle conductor (with configuration)
    II. Number of Three phase circuits
        1. Single circuit
        2. Double circuit vertical configuration
        3. Double circuit Horizontal configuration
    III. For double circuit configuration - the circuit arrangement
        1. abc-c'b'a'
        2. abc-a'b'c'
    IV. Whether the line is transposed or not

Apparatus Required: MATLAB 7.0 and above

Calculation: *Analytical calculation and MATLAB Code*

Observation:

Conclusion:

Questions:

Q1. What is the effect of unsymmetrical spacing of conductors in a 3-phase transmission line?

Q2. Why do we find line to neutral capacitance in a 3-phase system?

Q3. Find an expression for the flux linkages

(i) due to a single current carrying conductor

(ii) in parallel current carrying conductors