St Clements University Higher Education School
Highlight Computer Group IQY Technical College
BAE504 Power System Analysis

Each 10 marks

Q1.Complete the working of the following solution.

EXAMPLE 5.1 A single-current 60-Hz transmission line is 225 mi long. The load is 125,000 kW at 200 kV with 100% power factor. Evaluate the incident and reflected voltage at the receiving end of the line and at the sending end. Determine the line voltage at the sending end from the incident and reflected voltages. Compute the wavelength and velocity of propagation. The parameters of the line are

$R = 0.172\ \Omega/mi$ $\quad L = 2.18\ mH/mi$
$C = 0.0136\ \mu F/mi$ $\quad G = 0$

SOLUTION

$$z = 0.172 + j2\pi \times 60 \times 2.18 \times 10^{-3}$$

$$= 0.172 + j0.822 = 0.841\angle 78.2^{\circ}\ \Omega/mi$$

Q2.Express the model of Z Bus.

Q3 Express Fault Current ,Voltage and Admittance Vectors of the busbar a,b & c.

Q4.Write the model of matrix solution by determinant.

Q5.Write the mathematical model for determination of determinants.

Q6.The system consists of One Generator & Three loading busbars. If the fault occurs at busbar 3,find the fault current calculation model by Gauss Elimination method.

Q7.Write the electromagnetic coupling factor equation of tower and explain the terms.

Q8.Write the equation to calculate the Estimated Mean Time Failure.

Q9.How do you understand the series reliability?

Q10.Represent three phase network elements in impedance form.