

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATIONS- 2024
B.Tech-V Semester (ECE)

COURSE CODE(CREDITS): 18B11EC513(4)

MAX. MARKS: 15

COURSE NAME: Electromagnetic Waves

COURSE INSTRUCTOR: Salman Raju Talluri

MAX. TIME: 1 Hour.

Note: (a) All questions are compulsory. (b) Marks are indicated against each question in square brackets. (c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.

1. Derive the Telegraphers equations from the lumped element circuit model for a transmission line. [3 m CO-5]
2. Using analytical expressions, find the input impedance of the transmission line, reflection coefficient at the load and the VSWR for Figure 1. [3 m CO-5]

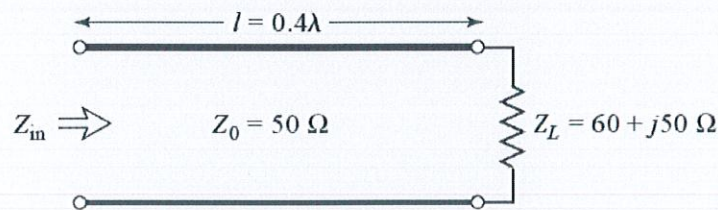


Figure 1: Transmission line with load

3. Use the Smith Chart to design an LC matching circuit if a load impedance of $Z_L = 100 + j75 \Omega$ is connected to a line of $Z_0 = 50 \Omega$ [3 m CO-5]
4. An infinite line charge density ρ_L C/m is parallel to the z-axis and passing through the point (1,2,0). Write the expression for finding the electric field intensity at the point (0,0,0). [3 m CO-1]
5. Explain the following terms very briefly. [3 m CO-1]
 - (a) Return loss and Insertion loss
 - (b) Potential difference between two points and Potential at a point. (With reference to Electric Potential)
 - (c) Differential length expressions in cylindrical coordinates and spherical coordinate systems