JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-V Semester (ECE)

COURSE CODE (CREDITS): 18B11EC513(4) MAX. MARKS: 25

COURSE NAME: Electromagnetic Waves

COURSE INSTRUCTOR: Dr. Salman Raju Talluri MAX. TIME: 1 Hour 30 Min.

***Note:** All questions are compulsory. Marks are indicated against each question in square brackets.*

---

1. What do you mean by impedance matching? Give all possible L-section impedance matching circuits to match arbitrary complex load impedance. [4marks] [Co-4]

2. The voltage on the transmission line is given by $v(x,t) = 20e^{-0.01x}\cos(2000\pi t - 0.5x)\ V$. Specify the direction of propagation, wavelength, phase constant and attenuation constant. Obtain the reflection coefficient as well, if possible. [4marks] [Co-4]

3. Derive the equation of continuity. With this, obtain the relationship between current density and electric filed intensity. [4marks] [Co-3]

4. Specify the boundary conditions for electric filed intensity and flux density at the interface between a dielectric and a conductor. Specify the boundary conditions for two dielectric interfaces as well.[4marks] [CO-2]

5. Give the expression for Gauss divergence law in integral and point form. Specify the dual of Gauss divergence theorem for electrostatics. [4marks] [Co-1]

6. Define/Explain the following. [5marks] [Co-1 to Co-4]
   a. Conservative and Non-conservative fields.
   b. Electric dipole field distribution.
   c. Method of Images.
   d. Equipotential surface and Electric field intensity.
   e. Distortion less transmission line.