

COURSE CODE(CREDITS): 18B11EC513(4)

MAX. MARKS: 25

COURSE NAME: Electromagnetic Waves

COURSE INSTRUCTORS: SRU

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory. (b) The candidate is allowed to make suitable numeric assumptions wherever required for solving problems. (c) Scientific Calculator is allowed.

Q.No	Question	CO	Marks
Q.1	With neat diagrams and mathematical equations, define all the possible charge distributions in space and steps in finding the total electric field intensity due to each of them.	CO-1	6
Q.2	Explain the significance of Maxwell's equations in integral form.	CO-2	5
Q.3	Given $J = -10^{-4}(ya_x + xa_y)A/m^2$, name what type of current density it is. Find the current crossing the $y = 0$ plane in the $-a_y$ direction between $z = 0$ and 1, and $x = 0$ and 2. What are the other two types of current densities exist in field theory?	CO-3	5
Q.4	A lossless line having an air dielectric has a characteristic impedance of 400Ω . The line is operating at 200 MHz and $Z_{in} = 200 - j200\Omega$. Use analytic methods to find (a) VSWR; (b) Z_L , if the line is 1 m long; (c) the distance from the load to the nearest voltage maximum.	CO-4	5
Q.5	Briefly Explain the following 1. Method of Images 2. Faraday's Law applications 3. Displacement Current Density 4. Electric Field Boundary Conditions on Metal interface	CO-3	4