

TEST-1, FEB. 2016
B.TECH (ECE) VIII SEMESTER

COURSE NAME: ANTENNA AND WAVE PROPAGATION
COURSE CODE: 16B1WEC831
COURSE CREDITS: 03

MAX. MARKS: 15
MAX. TIME: 1 HR

Note: Attempt all questions. Carrying of mobile phone in examination hall will be treated as unfair means.

Q1.(a) Explain various types of antennas. [2.5]

(b) Derive the Friss equation for polarization-matched antennas. [2.5]

Q2. (a) Explain the radiation mechanism for single wire, two wires and dipole antenna. [2.5]

(b) The radiated power intensity of an infinitesimal dipole antenna is given by $U = \hat{a}_r \sin^2(\theta) W/\text{unit solid angle}$. Determine the maximum directivity of the antenna and express the directivity as a function of the direction angles θ and ϕ . [2.5]

Q3. Using vector potential A , derive the expression of radiated fields in far field region, maximum directivity and radiation resistance for an infinitesimal antenna. [5]