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JAYA GROUP OF INSTITUTIONS – THIRUNINRAVUR

VI SEM – B.E

INTERNAL ASSESSMENT – 1 (MODEL EXAMINATION- 1)

Sub. Name :Antenna and Wave Propagation | Date :28.01.15
Sub. Code :EC2353 | Branch :ECE
Duration :180 minutes | Max. Marks:100

Part A - (10 x 2=20) Answer all the Questions:

1. If R_{rad} an antenna is 65 ohms and loss resistance is 10 ohms, find its efficiency.
2. Define Half Power Beam Width.
3. Find R_{rad} of an infinitesimal dipole whose overall length is λ /25.
4. Define effective aperture of an antenna.
5. Define directivity of an antenna.
6. Define end fire array and broadside array.
7. What is the effective area of a half wave dipole operating at 1 GHZ?
8. A uniform linear array contains 50 isotropic radiation with an inter element spacing of $\lambda/2$. Find the directivity of broadside form of arrays.
9. What is the pattern multiplication and draw the pattern of 2 point sources separated by $\lambda/2$?
10. Loop antenna is a magnetic dipole – Justify the statement.

Part B- (5 x 16=80)Answer the Questions As per the Choice:

11.a.i. Define and explain self impedance and mutual impedance of an antenna. (8)
ii.What is vector magnetic potential? (8)

Or

11.b.i. What is a Hertzian dipole? Derive the electric and magnetic field quantities of infinitesimal dipole and radiation pattern. (16)

12. a. Explain
1. Beam Solid Angle(3) 2. Radiation Pattern(3) 3.Gain(3) 4. Polarization(4)
5. Bandwidth(3) (16)

Or

12.b. State reciprocity theorem. Explain the reciprocity for two antennas. (16)

13.a.i. Write briefly on vector effective length of an antenna. (8)
ii.Write short notes on antenna temperature. (8)

Or

13.b. Derive the field quantities and R_{rad} of a half wave dipole. (16)

14.a. Derive Directivity for short dipole. (16)

Or

14.b. Derive R_{rad} for small loop antenna. (16)

15.a.i. Draw and explain the geometry of monopole. (8)
ii.Derive the nulls and maximum for two element array. (8)

Or

15.b.i. Explain the geometry of an uniform array of point sources. (8)
ii.Derive Array Factor for arrays of non uniform excitation. (8)