Subject: AWP
Assignment 1

1. Define and explain the following terms for an antenna :Directivity and Directive Gain ,Beam width and Bandwidth ,Antenna Efficiency and Beam Efficiency ,Front to Back Ratio and Effective Length ,Radiation resistance, directivity, First Null Beam width, Gain

2. Derive the maxima, minima and half power point directions if two point sources are fed with currents equal in magnitude but opposite in phase

3. An antenna has a loss resistance 25Ω, power gain of 30 and directivity 42 calculate its radiation resistance.

4. Derive the maxima, minima and half power point directions if two point sources are fed with currents equal in magnitude but opposite in phase

5. Obtain the expressions of electric and magnetic fields of an oscillating dipole.

6. Prove that radiation resistance of a quadrature-wave monopole antenna

7. is 36.5 ohm

8. "Effective length of an antenna for receiving is equal to its effective length as a transmitting antenna." – Prove.

9. An antenna whose radiation resistance is 300ohm operates at a frequency of 1 GHz and with a current of 3 A.Find the radiated power. (ii) What is the effective area of a half wave dipole operating at 500MHz ? (iii) Find the radiation resistance of a Hertzian dipole of length /40 , /60 , _/80 .

10. Obtain the beam width of broadside array and end-fire array.

11. Draw the radiation pattern of 4 element linear array with spacing between elements /2 and the currents in phase

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Assignment 2

1. Explain (i) Binomial array (ii) Arrays with Parasitic elements
2. For uniform linear array of „n „isotropic sources, obtain the expression for relative electric field at a far point. Find nulls and maxima of an array pattern formed by four isotropic antenna fed in phase and spaced λ/2 apart
3. Discuss the use of Dolph-Tchebysheff distribution and polynomials in detail in antenna array design
4. State and explain Skelkunoff's theorems for antenna arrays
5. Enlist applications of reciprocity theorems to antennas. Briefly explain any two applications.
6. Briefly explain end-fire array with necessary equations.

7. Explain principle of pattern multiplication for array of point sources. Give two examples of short dipole
8. Two planes 50km apart are in radio communication. The transmitting plane delivers 2000 watts. Its antenna gain being 40 in the direction of other plane. The power absorbed by the receiving antenna of the second plane is 20 micro watts. Calculate: i) electric field strength of the incident wave at the receiving antenna, ii) effective aperture

9. How impedance matching is done with the help of folded dipole antenna

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