



INTEGRAL UNIVERSITY LUCKNOW

Department of Electronics&Comm. Engineering

Antenna & Wave Propagation

ASSIGNMENT-2

Branch/Sem: B.Tech./ECE/ (VthSEM.)
Faculty-Qazi Saeed Ahmad
Subject Code: **IEC-506**

Session-2014-15
Date of issue-
Date of Submission-

Ques.1. What do you mean by Antenna array? Explain various forms of arrays.

Ques.2. Derive the field for the array of two point sources in following case and sketch them.

- (1) Equal amplitude and phase
- (2) Equal amplitude and opposite phase
- (3) Unequal amplitude and opposite phase

Ques.3 Explain Multiplication Pattern using suitable example.

Ques.4 Derive the field expression for linear array with n isotropic sources of equal amplitude and spacing.

Ques.5 Calculate the direction of maxima, minima and HPBW in Broadside case and sketch them.

Ques.6 What do you mean by Binomial array? Why Binomial array is used?

Ques.7. Find out magnetic field and electric field for short electric dipole at arbitrary point p .



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Q1. What do you mean by Antenna? How it works describe.

Q2. Describe the following terms.

- | | |
|------------------------|--------------------------|
| (a) Gain of Antenna | (b) Directive gain |
| (c) Power Gain | (d) Directivity |
| (e) Antenna Efficiency | (f) Front to back ratio |
| (g) Captured area | (h) Radiation Intensity |
| | (i) Radian and Steradian |

Q 3. Derive the relationship between maximum aperture and Directivity.

Q 4. What do you mean by effective length? Derive the expression for effective length of antenna

Q5 Derive the expression for maximum effective aperture of antenna.

Q.6 Explain the Polarization.

Q7. Explain the reciprocity theorem and prove it. What is its limitation.

Q8. Explain the antenna Impedance.

Q9. Prove that the bandwidth of antenna is given by f_r/Q .

Q10. Explain antenna temperature and equivalent noise temperature of antenna.

Q11. Find out magnetic field and electric field for short electric dipole at arbitrary point p.

Q12. What do you mean by Isotropic Radiator? Why this is called hypothetical Radiator? What is the importance of it for an Antenna?



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- Ques.1 Describe the construction of the following types of antenna with neat sketches.
- (i) A typical L.F. antenna
 - (ii) A typical H.F. antenna
 - (iii) A typical M.F. antenna
- Ques.2 Describe the principle of operation of the Rhombic antenna, explaining, how the various parameters of the antenna control the radiation pattern.
- Ques.3 What are distinguishing features of low, medium and high frequency antenna. What is tower antenna and where it is used.
- Ques.4 Discuss the effects of:
- (i) Ground effects
 - (ii) Structure and directional properties of a Rhombic antenna,
 - (iii) Height of antenna
- Ques.5 What is Yagi antenna? Explain its construction and properties with special reference to directivity and bandwidth.
- Ques.5 How much is input impedance of tower antenna?
- Ques.6 Write short notes on
- (a) Helical antenna
 - (b) Parasitic antenna
- Ques.7 Describe the Parabolic and lens antenna used at microwave frequencies. Discuss the relative merits and demerits of this antenna.
- Ques.8 Explain with the help of suitable diagram the working of log periodic antenna. What is practical application of this antenna?
- Ques.9 Explain the microwave antenna?



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ASSIGNMENT-4

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Ques.1. Describe the structure of ionosphere and the part played by it in long Distance transmission of radio signals in the HF band.

Ques.2. Write short notes on:

- (a) D-layer
- (b) Fading
- (c) Maximum usable frequency
- (d) Gyro-frequency
- (e) Atmospheric noise
- (f) Tropospheric propagation

Ques.3. Explain what is meant by?

- (a) Ground wave
- (b) Space wave propagation
- (c) Surface wave propagation
- (d) Duct propagation
- (e) Skip Distance
- (f) Effects of earthed curvature

Ques.4. Explain the effect of earth curvature.

Ques.5. Explain the critical frequency and multi-Hop propagation.