

PART B

Unit I

- 1.Explain the principle of reciprocity as applied to an antenna.
- 2.Derive the wave equation and obtain it's solution.
- 3.Derive the expression for the effective aperture and vector effective length.
- 4.Define self impedance and mutual impedance of an antenna.
- 5.What is vector magnetic potential?
- 6.What are Hertzian dipole? Derive the electric and magnetic field quantities of infinitesimal dipole and radiation pattern.
- 7.Explain 1. Beam Solid Angle 2. Radiation Pattern 3 Gain 4. Polarization 5. Bandwidth
- 8.Write short notes on antenna temperature.

Unit II

- 1.Derive the null and maxima for two element array.
- 2.Derive the expression for the radiated fields of a center fed $\lambda/2$ dipole antenna. Sketch the radiation pattern.
- 3.Derive Directivity for short dipole.
- 4.Derive R_{rad} for small loop antenna.
- 5.Draw & explain the geometry of monopole.
- 6.Explain the geometry of an uniform array of point sources.
- 7.Derive AF for arrays of non uniform excitation.

Unit III

- 1.Compare flat reflector and corner reflector antennas.
- 2.Explain how a pyramidal horn antenna gives the radiated fields.
- 3.Write short notes on (i) Slot antenna (ii) Lens antenna
- 4.Explain the common reflector shapes.
- 5.Explain the uniqueness theorem and field equivalence principle

Unit IV

- 1.With neat diagram explain helical antenna and briefly describe its operation in the axial mode and normal mode. How does it differ from other antennas?
- 2.How Radiation pattern and Gain of an antenna can be measured?
- 3.With a neat schematic diagram, explain the principle of operation of yagi-uda array.
- 4.Discuss briefly on construction and working principle of turnstile antenna.
- 5.With suitable geometry, describe the design of a log periodic dipole array.

Unit V

- 1.Calculate the great circle distance.
- 2.Explain the ground wave propagation.
- 3.Describe the Troposcatter propagation.
- 4.Explain the effect of Earth's magnetic field.
- 5.Describe the theory of propagation of surface wave.

6. Describe the theory of propagation of Electromagnetic wave through the ionosphere.

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