

Code :RR310404

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III B.Tech I Semester(RR) Supplementary Examinations, May 2011
ANTENNAS & WAVE PROPAGATION
 (Electronics & Communication Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. (a) Define and explain the significance of the terms: Radiation intensity, Beam area, Beam efficiency, effective height, and resolution.
 (b) A source has a constant power pattern limited to top half of the hemisphere only. Find its directivity and effective area.
2. (a) Define and explain the terms: radiation resistance and radiation efficiency.
 (b) Write down the radiation components of the fields for an electric dipole. Hence estimate the power radiated and derive an expression for the radiation resistance.
3. (a) A linear broad side array consists of four equal in phase point sources with $\lambda/3$ spacing. Calculate and plot the field pattern. Also find directivity and beam width.
 (b) Distinguish between ordinary EFA and an EFA with increased directivity and compare them.
4. (a) Explain the constructional features and distinguish between unidirectional and bi directional V antennas.
 (b) Discuss the characteristics, merits and demerits of a folded dipole, with and with out parasitic elements.
5. (a) Sketch the typical geometry of a helical antenna radiating in axial mode, and list out all its parameters and basic characteristics. List out the expressions for HPBW, BWFN, directivity and axial ratio.
 (b) With a neat sketch, explain the image formation and field calculation for the case of a 60° corner reflector.
6. (a) Explain the first transmission formula and its applicability for antenna gain measurements.
 (b) Explain the significance, merits and demerits of zoning in lens antennas.
7. (a) Discuss the phenomenon of ground wave propagation of long and medium waves. Show that this gives one of the most reliable method of the radio communication, although the range is limited.
 (b) Explain the different types of irregular Ionospheric variations.
8. A communication link is to be established between two stations using half wavelength antenna for maximum directive gain. Transmitter power is 1Kw, frequency of operation is 100 MHz and distance between transmitter and receiver is 100 Km. What is the maximum power received by receiver? Explain and derive the formulas used.
