Code: 9A04503



Max Marks: 70

B.Tech III Year I Semester (R09) Supplementary Examinations, May 2013 ANTENNAS AND WAVE PROPAGATION

(Electronics and Communication Engineering)

Time: 3 hours

Answer any FIVE questions All questions carry equal marks

- 1 (a) Define the terms:
 - (i) Beam width. (ii) Side lobe level. (iii) Polarization. (iv) Effective aperture area.
 - (b) What is the effective length of an antenna? Determine the effective length of a half wave dipole antenna.
- 2 (a) Define and explain the terms antennas gain, effective aperture, radiation intensity and effective length in case of a $\frac{\lambda}{2}$ dipole.
 - (b) Derive an expression for the terminal impedance as a function of frequency and hence define its bandwidth.
- 3 (a) Compute the principle bean width for broad side and end fire array.
 - (b) Explain the principle bean width for broad side and end fire array.
- 4 (a) Describe the construction and properties of rhombic antenna.
 - (b) Derive electric field expression for non resonant antenna.
- 5 (a) Describe the case grain feed mechanism of a parabolic reflectors.
 - (b) What are the different advantages and disadvantages of loop directional antenna?
- 6 (a) Explain the basic principles of operation in lens antennas. Hence distinguish between the different types of lens antennas used in practice.
 - (b) Calculate the minimum distance required to measure the field pattern of an antenna of diameter 2 m at a frequency of 3 GHz derive the necessary equation.
- 7 (a) Show that MUF of ionized layer is given by FCP1 + (D/2h) 2 for flat earth.
 - (b) Discuss the following:
 - (i) Ionospheric storms.
 - (ii) Sudden Ionospheric disturbances.
- 8 (a) What is signal fading? List the various types of fading and explain.
 - (b) Discuss the atmospheric effects in space wave propagation.

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