Code No: R05310403

Set No. 2

III B.Tech I Semester Regular Examinations, November 2007
ANTENNAS AND WAVE PROPAGATION
(Common to Electronics & Communication Engineering and Electronics & Telematics)

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Distinguish between Directive Gain and Power Gain.

   (b) An antenna has a radiation resistance of 73 ohms and a lossy resistance of 7 ohms. If the power gain is 20, calculate the directivity and the efficiency of the antenna.   [8+8]

2. (a) Derive an expression for radiance resistance of current element starting from the expression for radiation fields.

   (b) Prove that the impedance of an isolated antenna when used for receiving is same as when used for transmitting.   [8+8]

3. (a) In order to scan the beam of a linear array to 30^0 off broadside. Calculate the inner element phase shift required if the elements are spaced at 3 cms and the frequency is 64 KHz.

   (b) What are linear arrays. Compare Broadside array and End fire array.   [8+8]

4. (a) Derive an expression for electric field of a Non Resonant antenna of length 'l' carrying current.

   (b) Sketch and explain the constructional features of a Helical Antenna.   [10+6]

5. (a) What is a Parasitic Element? Describe the use of different types of parasites in TV receiving antennas.

   (b) Derive an expression for aperture field distribution of a parabolidal reflector.   [8+8]

6. (a) Describe the method of measuring the gain and radiation pattern of an antenna.

   (b) A standard gain horn antenna with a power gain of 12.5, is used to measure the gain of a large directional antenna by comparison method. The test antenna is connected to the receiver and an attenuator adjusted to 23dB in order to have the same receiver output. Find out the gain of the large antenna. [8+8]

7. (a) Define MUF and Critical frequency. Derive the expressions for the same. What is Secant law?

   (b) Describe the Ground wave propagation.   [8+8]

8. (a) Derive the field strength of tropospheric wave.

(b) Give an account of effect of earths imperfections and roughness.   [8+8]

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