T.E Sem 6 (Rev.) EXTC Antenna & Wave Propagation 08/12/08

Con. 5456–08. (REVISED COURSE) RC–6972

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Assumptions made should be **clearly** stated.
(4) Illustrate answer with **sketches** wherever **required**.

1. Explain the following :– 20
   (a) Retarded potential and its application
   (b) Any three basic antenna parameters
   (c) Babinet's principle as applied to antennas
   (d) Friss transmission equation
   (e) Magnetic dipole vs Electric dipole.

2. (a) List the parameters that decide overall pattern of array. 5
   (b) A broadside array consists of four isotropic sources with distance of Y2 between them. 15
   Find :–
   (i) The array factor
   (ii) Directions of major lobe and minor lobemaxima
   (iii) Direction of minima
   (iv) HPBW & FNBW
   (v) First minor lobe level
   (vi) Plot the pattern.

3. (a) Discuss merits and demerits of travelling wave antenna. 4
   (b) Explain Horn antenna. How is this antenna fed ? 8
   (c) Explain all the layers of ionosphere and their importance to radio wave communication. 8

4. (a) Discuss behaviour of loop antenna and sketch its field pattern. Explain important features of loop antenna. 10
   (b) Describe parabolic reflector used at microwave frequencies. Discuss Cassegrian method of feeding parabolic reflectors. 10

5. (a) Explain with suitable diagram working of log periodic antenna. Write down practical application of these antennas. 10
   (b) Explain the principle of pattern multiplication. 5
   (c) What do you mean by fading ? How it can be minimized ? 5

6. (a) What is folded dipole ? Find its radiation resistance. Discuss its applications. **10**
   (b) Explain the structure of microstrip antenna. Find its effective height and directivity. Discuss its applications. **10**

7. Write technical notes on :– **20**
   (a) Sleeve dipole
   (b) Tropospheric scatter propagation
   (c) Biconical antenna
   (d) Monopole antenna.

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