

Roll No. _____

Total Pages : 2

8912



BT-5/D05

ANTENNA AND WAVE PROPAGATION

PAPER - ECE-301E

Time : 3 Hrs.

Maximum Marks : 100

Note : Attempt five questions by selecting at least One question from each section. All questions carry equal marks. Assume suitable data if necessary.

SECTION- A

1. a. Derive the radiation resistance for a half wave dipole. 15
b. Calculate effective length of half wave dipole antenna for given data : $R_f = 73\Omega$, $(A_e)_{\max} = 0.13 d^2$ and $\eta = 120\pi$. 5
2. Write short notes on : 5 x 4
 - a. Radiation pattern
 - b. Polarization
 - c. Effective height
 - d. Beam width

SECTION - B

3. Explain with sketches a helical antenna and briefly describe its operation in the axial mode. How does it differ from other antennas ? 20
4. Derive the expression for radiated fields and characteristics impedance of the infinite Biconical antennas. 20

(5th sem. Electronics)

10

SECTION - C

5. a. Explain important features of horn antenna and the principle of its working. 10
b. Describe the methods of feeding a parabolic reflector in which the primary antenna is located at the focal point. 10
6. a. Explain working of a folded dipole antenna. 10
b. Write short notes on Broad-band antennas. 10

SECTION- D.

7. a. Assume that reflection takes place at a height of 400 km and that the maximum density in the ionosphere corresponds to a 0.9 refractive index at 10 MHz. What will be the range for which the MUF is 10 MHz ? Take the earth curvature into consideration. 12
b. Derive the expression for virtual height. 8
Write short notes on : 5 x 4
 - a. Optimum working frequency for ionosphere
 - b. Duct propagation
 - c. Multihop propagation
 - d. Fading of received signal

(5th sem. Electronics)

11