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BT-5/D06

Antenna and Wave Propagation

Paper : ECE–301 E

Time : Three Hours] [Maximum Marks : 100

Note :– Attempt any **FIVE** questions.

1. (a) Discuss the concept of Retarded Vector and Scalar Potential. 8

   (b) Derive the expression for radiation resistance 12

$$R_{rad} = 80\pi^2\left(\frac{\partial \ell}{\lambda}\right)^2$$

2. (a) An Antenna has an effective height of 100 meters and current at the base is 450 A(rms) at 40 MHz. What is the power radiated ? If the total resistance of Antenna is 1.12 ohms what is the efficiency of the Antena ? 12

   (b) Explain the term Radiation pattern, Beamwidth, Antenna gain and Directivity. 8

3. (a) Explain various aspects of Biconical Antenna. 10

   (b) Discuss various features of Helical Antenna. 10

4. What are the Antenna Array's ? Explain endfire and broadside array in detail. 20

5. (a) Explain E and H Plane Horn Antenna. 10

   (b) Explain working of log Periodic Antenna. 10

6. Explain various modes of Propagation. 20

Contd.

place at a height of 400 km and tha

the maximum density in the ionosphere corresponds to .9 refractiv index at 10 MHz. What will be the range for which MUF 10 MHz assuming flat earth ? 2

8. Write short notes on any **two** :

   (i) Yagi UDA Antenna

   (ii) Power Radiated by Current Element

   (iii) Rumsey's principle.