

1128  
B.E. (Electronics and Communication Engineering)  
Fifth Semester  
EC-503: Antennas and Wave Propagation

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:-
  - a) What is an antenna? An antenna is a sensor or not?
  - b) dBi means \_\_\_\_\_. Why it is used?
  - c) Define End Fire array.
  - d) Radiation resistance of ferrite rod depends on\_\_\_\_\_.
  - e) Surface Wave propagation is used when frequency is in (a) UHF range (b) VHF range (c) L.F Range (d) Microwave Range (5x2)

UNIT - I

- II. a) What do you mean by Effective length of antenna? Describe effective lengths of transmitting antenna and Receiving antenna.
- b) What is antenna equivalent circuit and how it is different from an RLC circuit? (5,5)
- III. a) Find out Null to Null beam width of broadside array when array length is  $10 \lambda$  and number of elements is 20.
- b) Find the directivity of half wave dipole. (5,5)
- IV. Discuss Log periodic array and its design equations in detail with diagram. (10)

UNIT - II

- V. Design a Rhombic antenna to operate at a frequency of 30 MHz with the angle of elevation  $\Delta = 30^\circ$  with respect to ground. (10)
- VI. Discuss following characteristics parameters of Ionospheric Propagation with diagram
  - a) Maximum Usable Frequency
  - b) Critical Frequency
  - c) Virtual Height (10)
- VII. What are the factors involved in the propagation of radio waves? Discuss ground wave propagation in detail. (10)

x-x-x