Code: EC5T4

### III B.Tech - I Semester – Regular/Supplementary Examinations October 2017

## ANTENNA AND WAVE PROPAGATION
### (ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours                                     Max. Marks: 70

### PART – A

Answer *all* the questions.   All questions carry equal marks

11x 2 = 22 M

1.
   a) Antenna is active or passive element?
   b) Define Directivity of an antenna.
   c) Explain Antenna Efficiency.
   d) Define Array factor.
   e) How does Directivity changes when we go from normal antenna to arrays?
   f) List out Different broadband Antennas.
   g) In far field approximation of small loop antenna what components of E and H will exist?
   h) Calculate the modified Gain in dB of a parabolic reflector when its size is made six times than it was?
   i) List out the applications of Biconical Antenna.
   j) What is the cutoff wavelength in duct Propagation?
   k) What are M-curves?

# PART – B

Answer any *THREE* questions. All questions carry equal marks.

$$3 \times 16 = 48 \text{ M}$$

2.a) Explain the mechanism how antenna Radiates?                    6 M

b) Mention any five parameters of an antenna.                    10 M

3.a) Derive the field components of 2 elements array antenna.

8 M

b) Explain Design procedure for the End-fire array antenna.

8 M

4.a) Compare V- antenna and Rhombic Antenna.                    6 M

b) Explain Design procedure and its Applications for Yagi-Uda Antenna.                    10 M

5.a) Write a short note on Lens antenna.                    8 M

b) Determine the diameter required for a parabolic reflector if the directive gain of the 2GHz antenna is to be 30dB. What will be the half power beam width?                    8 M

6.a) Define critical frequency, MUF, LUF, skip Distance.     8 M

b) What is LOS propagation? How does it differ from ground
  wave and Sky wave propagation?                          8 M