PVP 12

Code: EC5T4

III B.Tech - I Semester – Regular Examinations - November 2015

ANTENNA AND WAVE PROPAGATION
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 70

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

1. a) Define Beam efficiency, Antenna efficiency, Directivity, and Beam area. 7 M

   b) Explain the radiation mechanism. 7 M

2. a) Prove that the radiation resistance of half wave dipole is 73Ω. 8 M

   b) Explain basic principle of small circular loop antenna. 6 M

3. a) Derive the array factor of N-element uniform linear array. 6 M

   b) Find the Null-o-Null beam width of end fire array when array length is 10λ and N=20. 4 M

   c) Write short notes on Binomial arrays. 4 M

4. a) Design a rhombic antenna to operate at f= 30MHz with an elevation angle $\Delta=30^0$. 6 M

b) Write about helical antenna in axial and normal mode. 8 M

5. a) Explain about spill over radiation and aperture blocking. 7 M

b) Derive input impedance of 2 element folded dipole. 7 M

6. a) Find the power gain and directivity of a horn whose dimensions are 10 x 5 cm operating at a Frequency of 6GHz. 4 M

b) Explain the concept of zoning. 4 M

c) Draw and explain about gain measurement method. 6 M

7. a) Explain atmospheric effects in space wave and sky wave Propagation. 8 M

b) Define the critical frequency and skip distance. 6 M

8. a) Explain about duct propagation and draw M-H curves. 7 M

b) What is a radio horizon? Derive the expression for radio horizon. 7 M