

Code: ECMC1T5B

**I M.Tech - I Semester - Regular Examinations – April 2015**

**ANTENNA ARRAYS AND SYNTHESIS  
(MICROWAVE & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Explain the antenna terms of Power density, Directivity and Effective height. 6 M  
b) Explain and Derive Friis Transmission equation. 8 M
2. a) Explain N- element linear arrays for uniform amplitude excitations. 8 M  
b) Derive array factor expressions for N-element Broadside Antenna. 6 M
3. a) Explain the impedance effects of Mutual coupling. 7 M  
b) Explain Mutual coupling in arrays. 7 M
4. a) Explain the analysis of elliptical arrays. 6 M

- b) Explain rectangular and circular arrays, and derive array factor. 8 M
5. a) Derive and Discuss Schelkunoff polynomial method. 7 M
- b) Explain Fourier Transform method. 7 M
6. a) Explain about Hemi spherical coverage using half sphere and paraboloid. 8 M
- b) Explain briefly about multifaceted surfaces. 6 M
7. a) Explain pencil beam array and finite patch array. 7 M
- b) Explain the analysis of micro strip patch arrays. 7 M
8. Write short notes on the following
- a) Antenna Impedance measurement. 5 M
  - b) Antenna Directivity measurement. 5 M
  - c) Antenna Gain measurement. 4 M