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Name..

Reg. No..
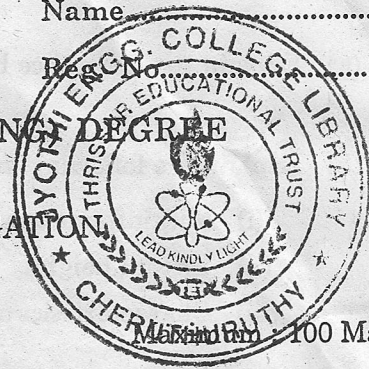
SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2011

EC 04 606—RADIATION AND PROPAGATION

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Answer **all** *questions.*

I. (a) What is retarded potential ? Explain.

(b) Define and explain Bahinet's principle for slot antennas.

(c) Define Array factor. Explain its significance.

(d) Explain the potential applications of binomial array.

(e) What is a diamond antenna ? Explain its construction and application.

(f) Explain the Cassegrain feed arrangement with a neat sketch.

(g) Explain the limitations of ground wave propagation.

(h) Define and explain : fcr and fmut.

(8 × 5 = 40 marks)

II. (a) (i) State and explain antenna reciprocity theorem.   (7 marks)

(ii) Derive Lorentz reciprocity theorem for receiving antennas.   (8 marks)

Or

(b) (i) Explain the different antenna field zones in detail with a neat sketch.   (7 marks)

(ii) Compute the radiation resistance of quarter wave monopole antenna. (8 marks)

III. (a) Explain the principle of pattern multiplication with neat sketches.

Or

(b) Explain the construction and operation of end fire array. Derive an expression for 3 dB beam width.

IV. (a) Write technical notes on :

(i) Broadband dipole.   (7 marks)

(ii) Horn antenna.   (8 marks)

Or

(b) Explain the principle and design details of parabolic reflector antenna with a neat diagram.

Turn over

V. (a) Explain the difference between space wave propagation and skywave propagation.

<div align="center">Or</div>

(b) Explain the following in detail :—

(i) Multidrop propagation.   (5 marks)

(ii) Virtual height.   (5 marks)

(iii) Characteristics of ionosphere.   (5 marks)

<div align="right">[4 × 15 = 60 marks]</div>