C 47608 (Pages 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2008

EC 04 606—RADIATION AND PROPAGATION

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

I. (a) Explain the development of dipole and folded dipole antenna elements from transmission line sections.

(b) State and explain reciprocity theorem.

(c) Draw a neat sketch of a 4 element array and explain its principle.

(d) Explain the principle of binomial array with a neat sketch.

(e) Draw a neat sketch of a double 'V' antenna and explain.

(f) What are E-plane and H-plane sectoral horn antennas ? Explain with neat sketches.

(g) What is MUF ? Explain what is its significance.

(h) Explain in brief the potential applications of Ionosphere.

(8 × 5 = 40 marks)

II. (a) (i) Obtain the relation between gain and effective area of an antenna. (7 marks)

(ii) State and explain Babinet's principle. (8 marks)

Or

(b) (i) Explain in detail the antenna field zones and their significance. (7 marks)

(ii) Derive an expression for radiation resistance of oscillating electric dipole. (8 marks)

III. (a) (i) Derive an expression for antenna array factor. (7 marks)

(ii) Bring out the design details of Dolph Tchebyscheff array. (8 marks)

Or

(b) (i) Differentiate broadside array from end fire array. (7 marks)

(ii) Explain the principle of radiation pattern multiplication with neat sketches. (8 marks)

IV. (a) (i) Explain in detail the feed configuration and applications of parabolic reflector antenna. (7 marks)

(ii) Explain the construction and principle of antenna in detail. Differentiate it from Rhombic antenna. (8 marks)

Or

Turn over

(b) Draw a neat sketch of microstrip antenna and explain its principle of radiation. Explain its various feed configuration. Derive its design equations.

V. (a) (i) Differentiate space wave propagation from sky wave propagation. (7 marks)

(ii) Explain in detail the characteristics of Ionosphere. (8 marks)

Or

(b) Write short notes on :

1 Multihop propagation.

2 Skip zone.

3 2 Ray model of space wave propagation.

(3 × 5 = 15 marks)

[4 × 15 = 60 marks]