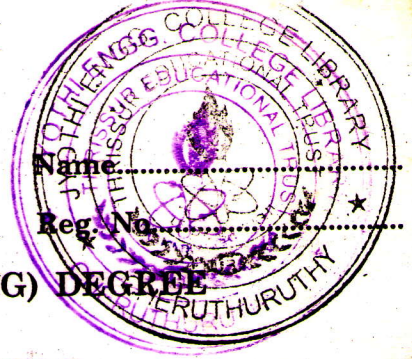


C 20556



**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2006**

EC 2K 602—RADIATION AND PROPAGATION

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

- I. (a) State and explain Babinet's principle for complementary antennas.
(b) State and derive reciprocity theorem.
(c) What is the need for antenna array ? Explain.
(d) Show that a binomial array does not have sidelobes with an example.
(e) What are primary Radiators ? Explain. Give examples.
(f) Give an account on "Broadband dipole".
(g) Explain the 2 ray model of space wave propagation with a neat sketch.
(h) State and explain the characteristics of Ionosphere.

(8 × 5 = 40 marks)

- II. (a) (i) What are the *three* different antenna field zones ? Explain them.
(ii) Define and explain : (1) Gain ; (2) Directivity ; and (3) Self-impedance.

Or

- (b) Derive an expression for power radiated by an oscillating electric dipole.

- III. (a) Explain in detail the principles of BSA and EFA with neat sketches.

Or

- (b) Write technical notes on :

(i) Binomial array.

(ii) Dolph-Tchebyscheff array.

- IV. (a) What are the different types of horn antennas ? Explain their structures and principles of operation in detail.

Or

- (b) Draw a neat sketch of a two reflector system. Explain its principle of operation. State its merits and limitations. Compare it with single reflector system.

- V. (a) (i) Explain the characteristics of Troposphere.
(ii) Derive the characteristics equations of Ionosphere.

Or

- (b) (i) Explain in detail the reflection and refraction of waves by the Ionosphere.
(ii) Give an account on 'plasma frequency'.

(4 × 15 = 60 marks)