C 6262 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2005

EC 2K 602. RADIATION AND PROPAGATION

(New Scheme)

Time : Three Hours Maximum : 100 Marks

1. (a) What are the three different antenna field zones ? Explain them. Write their boundaries.
   (b) Define (i) Beam efficiency ; (ii) Radiation intensity ; and (iii) Self impedance.
   (c) Explain the features of binomial array.
   (d) State the advantages of radiation pattern multiplication principle.
   (e) Explain the construction of V antenna, with a neat sketch.
   (f) Draw the structure of Cassegrain antenna. State its advantages and limitations.
   (g) What is plasma frequency ? Explain write equation for it.
   (h) Write the characteristic equations of Ionosphere.

(8 × 5 = 40 marks)

2. (a) (i) Explain the potential functions for sinusoidal oscillations.
   (ii) Differentiate halfwave dipole from quarter wave monopole.

Or

   (b) (i) Derive the directivity value of halfwave dipole.
   (ii) State and derive Lorentz reciprocity theorem.

3. (a) With neat sketches, explain in detail the radiation pattern multiplication principle.

Or

   (b) Broadly differentiate BSA from EFA. Derive expressions for half power beam widths for both BSA and EFA.

4. (a) Differentiate :
   (i) Traveling wave antenna from standing wave antenna.
   (ii) V antenna from Rhombic antenna.

Or

   (b) Draw a neat sketch of 3 element YAGI-UDA antenna array. Derive an expression for gain of 3 element YAGI-UDA array.

Turn over

(i) Explain the limitations of ground wave propagation.

(ii) Explain the characteristics of tropospheric waves.

(b) (i) Differentiate sky wave propagation and space wave propagation

(ii) Define and explain :

(1) Critical frequency

(2) Virtual height.

(4 × 15 = 60 marks)