

B.Tech. Degree VII Semester Examination November 2012

EC 702 RADIO COMMUNICATION (2006 Scheme)

Time : 3 Hours

Maximum Marks :100

PART A (Answer ALL questions)

(8 × 5 = 40)

- I. (a) Define power gain and explain its practical importance.
 (b) Write notes on effective area of antenna.
 (c) Explain broad side array with diagrams.
 (d) Find the equation of far field radiation pattern of two isotropic point sources of same amplitude and phase.
 (e) Write notes on duct propagation.
 (f) Explain the mechanism of radiowave bending by the ionosphere.
 (g) Derive RADAR range equation.
 (h) Explain Doppler frequency shift.

PART B

(4 × 15 = 60)

- II. (a) Explain retarded potential. (5)
 (b) Write notes on: (10)
 (i) Short dipole
 (ii) Loop antenna

OR

- III. (a) An antenna has a loss resistance 10 ohm power gain of 20 and directivity 22. (5)
 Calculate its radiation resistance.
 (b) Write notes on: (10)
 (i) Directive gain
 (ii) Radiation pattern

- IV. (a) Describe binomial array. (5)
 (b) Explain Yagi-Uda antenna with diagrams. (10)

OR

- V. (a) Explain pattern multiplication. (5)
 (b) Explain the following antenna parameter measurement with diagrams. (10)
 (i) Radiation pattern
 (ii) Gain (Direct method)

- VI. Write notes on: (15)
 (i) Skip distance
 (ii) Maximum usable frequency
 (iii) Virtual height

OR

- VII. (a) Explain the structure of ionosphere. (5)
 (b) Calculate the expression for f_{muf} considering earth to be flat. (5)
 (c) Explain space wave propagation. (5)

- VIII. (a) Explain monopulse tracking RADAR with block diagram. (10)
 (b) Write notes on pulse repetition frequency. (5)

OR

- IX. (a) Explain the block diagram of a simple CW Doppler RADAR. (10)
 (b) Explain sequential lobing and conical scanning. (5)