Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 61207

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Sixth Semester

Electronics and Communication Engineering

EC 1352 A — ANTENNAS AND WAVE PROPAGATION

(Regulation 2008)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State reciprocity theorem.

2. Define Directive gain of an antenna.

3. What is meant by Retarded potentials?

4. Write the expression for the power radiated by a half wave dipole.

5. What are the advantages of Rhombic antenna?

6. Write the design consideration of a helical antenna in Axial and Normal mode.

7. What is offset feed system?

8. What is the principle of parabolic reflectors?

9. What is skip distance?

10. What is line of sight propagation?

PART B — (5 × 16 = 80 marks)

11. (a) Derive a relationship between directive gain, effective length and radiation resistance of a dipole antenna. (16)

Or

(b) Obtain the radiation pattern of a linear array of 4 isotropic element spaced $\lambda/2$ apart and with equal currents fed in phase. (16)

12. (a) Explain in detail how the current distribution varies with respect to length (λ) of thin wire antennas. (16)

Or

(b) Obtain an expression of an antenna for average power in terms of r.m.s current and obtain the radiation resistance of a quarter wave monopole. (16)

13. (a) Illustrate how 'V' antennas are formed and discuss in detail about their radiation resistance. (16)

Or

(b) Describe the design considerations for helical antennas in Axial and Normal mode. (16)

14. (a) With a neat sketch explain the principle of parabolic reflector and cassegrain feed system. (16)

Or

(b) Explain the radiation from a rectangular aperture treated as an array of huygen's source. (16)

15. (a) Explain different atmospheric effects in space wave propagation. (16)

Or

(b) Discuss in detail the structure of the ionosphere and effect of earth's magnetic field in sky wave propagation. (16)
