

B.TECH. DEGREE EXAMINATION, MAY 2014**Sixth Semester**

Branch : Electronics and Communication Engineering

EC 010 603—RADIATION AND PROPAGATION (EC)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A*Answer all questions.**Each question carries 3 marks.*

1. Define antenna radiation patterns. What is its significance ?
2. Explain the features of binomial array.
3. What are the different modes of operation of helical antenna ?
4. Explain the limitations of ground wave propagation.
5. How will you measure the effective gain of an antenna ?

(5 × 3 = 15 marks)

Part B*Answer all questions.**Each question carries 5 marks.*

6. Define (i) Beam efficiency ; and (ii) Antenna efficiency.
7. Define and explain array factor.
8. What are the various effects of antenna height ?
9. Define (i) MUF ; and (ii) Virtual height.
10. How will you measure the polarization of an antenna ?

(5 × 5 = 25 marks)

Part C*Answer all questions.**Each full question carries 12 marks.*

11. (a) Explain various antenna field zones and their boundaries with neat sketches.
(b) Obtain an expression for radiation resistance of an oscillating current element.

*Or***Turn over**

12. (a) State and derive reciprocity theorem.
- (b) Differentiate half-wave dipole from quarter wave monopole.
13. Explain the radiation pattern multiplication with a neat sketch.

Or

14. Explain the principle of operation of broad side array with neat sketch.
15. Explain the structure and working of Rhombic antenna.

Or

16. Explain the working of log-periodic antenna and its design.
17. Explain the factors involved in the propagation of radiowaves.

Or

18. Explain the structure of ionosphere. Derive the characteristic equation of ionosphere.
19. How will you measure the directional pattern of an antenna ?

Or

20. Define the steps to measure the range of an antenna.

(5 × 12 = 60 marks)