

ANNA UNIVERSITY COIMBATORE
B.E. / B.TECH. DEGREE EXAMINATIONS : MAY / JUNE 2010
REGULATIONS : 2007
SIXTH SEMESTER : ECE
070290073 - ANTENNAS AND WAVE PROPAGATION

TIME : 3 Hours

Max.Marks : 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. Define beam solid angle.
2. Define Directivity.
3. What is radiation resistance?
4. A thin dipole is $\lambda/15$ long. Find its radiation resistance.
5. Define beam width.
6. What is the principle of pattern multiplication?
7. Compare BSA and EFA.
8. Draw the radiation pattern of BSA.
9. What is smart antenna?
10. What is loop antenna?
11. Find the radiation efficiency of a 1-m diameter single turn loop ($C = 3.14$ m) of 10 –mm diameter copper wire at 1 MHz.
12. What are the different types of horn antenna?
13. A HF radio link is established for a range of 2000 km. If the reflection region of the ionosphere is at a height of 200 km and has f_c of 6 MHz, calculate MUF
14. Mention the use of duct propagation?
15. What is selective fading?
16. Define critical frequency.
17. What are the methods used to measure antenna gain?

18. Define group velocity.
19. Give the expression for MUF.
20. What is the basic principle of slotted line method?

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. Derive an expression for radiated power and radiation resistance of half-wave dipole antenna.
22. a Write short notes on Reciprocity principle. 6
b Derive an expression for directivity in terms of beam solid angle. 6
23. a Write short notes on Binomial array. 4
b Explain the field pattern of arrays of two point sources with equal amplitude and phase. 8
24. a Describe the features of Log periodic antenna. 6
b Write short notes on Embedded antennas. 6
25. Explain the structure and working principle of parabolic reflector antenna with a neat sketch.
26. a Derive an expression for effective dielectric constant of Ionosphere. 10
b Draw a neat sketch of different ionized regions of ionosphere above the earth surface. 2

27. a Explain ground wave propagation and obtain expression for field strength. 8
- b Write short notes on Diversity reception. 4
28. Explain the measurement of vertical incidence along with a brief discussion of its results

*****THE END*****