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Question Paper Code: 36403

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Sixth Semester

Electronics and Communication Engineering

01UEC603 - ANTENNA AND WAVE PROPAGATION

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. If the radiation resistance of an antenna is 65Ω and loss resistance is 10Ω find its efficiency.
2. Define half power beam width.
3. State the principle of pattern multiplication.
4. What is a short dipole?
5. Define duality principle.
6. What are the various feeds used in reflectors?
7. Why log periodic antenna is named so?
8. List the limitations of rhombic antenna
9. Define skip distance.
10. What is meant by Faraday rotation?

PART - B (5 x 16 = 80 Marks)

11. (a) Derive the electric and magnetic field components of Hertzian dipole. (16)

Or

(b) Derive the expression for electric and magnetic fields of a oscillating current element. (16)

12. (a) (i) Derive the expression for the radiated fields of a centre fed $\lambda/2$ dipole antenna. Sketch the radiation pattern. (12)

(ii) Derive the radiation resistance and directivity of a $\lambda/2$ dipole antenna. (4)

Or

(b) Derive the expression for field pattern of broad side array of two element array. Find the angles of nulls and maxima points. Also draw the radiation pattern. (16)

13. (a) With a neat sketch and explain the slot antenna and its radiation mechanism. (16)

Or

(b) Explain the basic principle of operation of lens antenna. List its application, merits and demerits. (16)

14. (a) Describe the construction of rhombic antenna and its properties with reference to directivity and bandwidth. (16)

Or

(b) With a neat sketch and explain the construction and operation of helical antenna. (16)

15. (a) Summarize the structure of the ionosphere and explain the phenomena of wave bending introduced by these layers. (16)

Or

(b) (i) Discuss the effects of earth's magnetic field on radio wave propagation. (6)

(ii) Discuss on the following

(1) MUF

(2) Duct propagation

(3) Skip distance

(4) Virtual height

(5) Fading

(10)