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

Question Paper Code: 1066109

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV / DEC 2024
Sixth Semester
Electronics and Communication Engineering
U20EC601– ANTENNA AND WAVE PROPAGATION
(Regulation 2020)

Time: Three Hours | Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. What is meant by front to back ratio?
2. Why a short dipole is called an oscillating dipole?
3. State the method of feeding slot antenna.
4. Give the difference between slot antennas and its complementary dipole antenna.
5. Mention the features of rectangular patch antennas.
6. Tell about cassegrain feed system in parabolic reflector.
7. Define critical frequency.
8. Define skip distance.
9. Mention the source of error in antenna measurement.
10. Which types of antennas are used for terrestrial mobile communication systems?

PART – B (5 x 16 = 80 Marks)

11. (a) Define and describe the following parameters: (i) Directivity (ii)Radiation Intensity (iii)Effective aperture (iv)Effective height (16)

(OR)

(b) Derive the expression for the power radiated and the radiation resistance of a half wave dipole. (16)

12. (a) Draw the structure of Yagi-uda Antenna? Explain the construction and operation of Yagi-uda Antenna. Also explain its general characteristics. (16)

(OR)

(b) Discuss the construction of the Horn antenna and draw the measured E- and H-Plane field patterns of rectangular horns as function of flare angle and horn length. (16)

13. (a) Write short notes on microstrip antenna. List the advantages and disadvantages of microstrip antenna. Discuss the ways to improve the bandwidth of microstrip antenna and also explain the different feeding techniques for micostrip antenna.

(16)

(OR)

(b) With neat diagram, explain the principle of Parabolic reflector antenna and various types of feed used. (16)

14. (a) (i) Derive an expression for the refractive index of the ionosphere in terms of electron number density and frequency.

(ii) Explain the terms : Spacewave propagation and multi hop propagation. (10+6)

(OR)

(b) (i)Describe the significant features of ground wave propagation.
(ii)Explain with the help of suitable sketch, the concept of skip distance and its relation to maximum usable frequency. (6+10)

15. (a) Explain in detail about Directivity and gain measurements. (16)

(OR)

(b) Discuss in detail about the key design considerations for antennas in satellite communication. (16)

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