R18

Code No: R18A0410

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, April 2023

Antennas & Wave Propagation

(ECE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	***A***	Explain the following terms: i. Beam Area, ii. Radiation resistance, iii. Directivity iv. Effective Area and v. Resolution	**[2M]** **[2M]** **[2M]** **[2M]** **[2M]**
	B	Discuss about far fields and patterns of thin linear center-fed antennas of different lengths	**[4M]**
		OR	
2	***A***	Compare the monopole and dipole antenna.	**[7M]**
	B	State and prove Helmholtz's theorem.	**[7M]**

SECTION-II

3	***A***	Explain the working principal of yagi-uda antenna.	**[7M]**
	B	State the Fermat's Principal, and explain its applicability to Horn Antennas. List out the standard antennas.	**[7M]**
		OR	
4	***A***	Explain the Impact of Different Parameters on the characteristics of Microstrip Antennas.	**[7M]**
	B	Write a short note on Folded Dipoles and their Characteristics.	**[7M]**

SECTION-III

5	***A***	How an unidirectional pattern is obtained in an end fire array? Explain in detail.	**[7M]**
	B	With the help of neat block diagram, explain how the gain of the antenna is measured.	**[7M]**
		OR	
6	***A***	Describe in detail the set up for measurement of radiation pattern.	**[7M]**
	B	Explain binomial theorem and draw the radiation pattern with 4 element array with $d=\lambda/2$.	**[7M]**

SECTION-IV

7	***A***	What is the mechanism of space wave propagation over ideal flat earth with a neat sketch?	**[7M]**
	B	Illustrate the scattering phenomena with a diagram.	**[7M]**
		OR	
8	***A***	Explain the principle of tropospheric propagation.	**[7M]**

	B	Outline the expression for field strength variation with distance and height at the receiving antenna of space wave propagation.	**[7M]**

SECTION-V

9	***A***	Explain the following terms: LUF, Virtual Height and Skip Distance,	**[7M]**
	B	Illustrate the multihop propagation with diagram.	**[7M]**

OR

10	***A***	Write about sky wave propagation and explain the Effects of ionosphere abnormalities.	**[7M]**
	B	Explain the effects of D and F layers of the ionosphere on propagation and estimate the critical frequency and MUF for a layer with $10^{11}/m^3$ electron density, and an incident angle of 60^0. What are LUF and optimum frequencies?	**[7M]**

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