

Code No: **R17A0416****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

(Autonomous Institution – UGC, Govt. of India)

**III B.Tech II Semester Supplementary Examinations, April 2023****Antenna and Wave Propagation**

(ECE)

<b>Roll No</b>									
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**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 Derive the following antenna parameters : [6M]  
i. Radiation Intensity [6M]  
ii. Directivity [2M]  
iii. FBR  
OR  
2 Explain about Radiation from a half-wave dipole. [14M]

**SECTION-II**

- 3 Explain about the Yagi-Uda antenna. [14M]  
OR  
4 Explain the operation of helical antenna in axial mode and Normal Modes. [14M]

**SECTION-III**

- 5 Discuss in detail, about Antenna Gain measurement with respect to various methods. [14M]  
OR  
6 Find the gain of a paraboloid of 2m diameter operating at 5 GHz when Half-wave dipole feed is used. [14M]

**SECTION-IV**

- 7 Derive an expression for the variation of field strength of a space wave, with antenna heights and distance involved. [14M]  
OR  
8 Derive an expression for the radiation pattern of a Broadside uniform linear array of 4- elements with  $\lambda/2$  spacing and obtain its radiation pattern. [14M]

**SECTION-V**

- 9 Derive the reflective index and cutoff frequency of a layer in Sky Wave propagation. [14M]  
OR  
10 Discuss in detail about the Reflection of Sky waves by Ionosphere, virtual height and skip distance. [14M]

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