Code No: 156AF **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, February - 2023

ANTENNAS AND PROPAGATION

(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Define effective height.	[2]
b)	What is meant by radiation resistance?	[3]
c)	Define Point source in antenna arrays.	[2]
d)	What is source of errors?	[3]
e)	Write the applications of Horn antenna.	[2]
f)	What is monofilar helical antenna?	[3]
g)	Define feed method in reflector antennas.	[2]
h)	What are different types of reflectors?	[3]
i)	Define space and surface waves in ground wave propagation.	[2]
j)	What is multi hop propagation?	[3]

PART – B

(50 Marks)

2.a)	Discuss about Retarded potentials in antennas.	
b)	Explain about Oscillating Dipole.	[4+6]
	OR	
3.a)	Explain and derive the equation of Radiation resistance of Quarter-wave monopole.	
b)	Compare Far fields of small loop and short dipole.	[6+4]
4.a)	Explain the principle and operation of pattern of multiplication.	
b)	Discuss about Field strength of Uniform linear array.	[5+5]
	OR	
5.a)	Explain the measurement of Directivity in any method.	
b)	How uni directional pattern is obtained in end-fire array?	[5+5]
6.a)	Draw and explain the pyramidal Horn Antenna.	
b)	Explain about folded dipole with neat diagram and write its applications.	[5+5]
	OR	
7.a)	Explain the principle and operation of Helical antenna with neat diagram.	
b)	Design a three element Yagi-Uda antenna to operate at a frequency of 172 MHz.	[5+5]

8.a) Discuss about rectangular patch antenna and write its limitations.
b) Write the pattern characteristics of reflector antenna. [6+4]

OR

9.a) Explain about parabolic reflector antenna with neat diagram.
b) A parabolic reflector with a mouth diameter of 22 meters operates at 5 GHz frequency, efficiency of 0.6. Find the power gain? [5+5]

10.a) Explain the reflection of radio waves by the surface of the earth in ground wave Propagation.
b) Discuss about effect of the curvature of the earth in space wave propagation. [5+5]

OR

11. Write short notes on:
a) MUF
b) Ray path
c) Characteristics of Ionosphere
d) Duct Propagation. [10]

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