IV-II ECE

R16

Code No: 136AF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, December - 2019

ANTENNAS AND WAVE PROPAGATION

(Electronics and Communication Engineering)

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

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Define radiation intensity.	[2]
b)	What is beam efficiency? What it indicates?	[3]
c)	What area the Helix modes?	[2]
d)	Write the types of Horn antenna.	[3]
e)	Write the applications of microstrip antennas.	[2]
f)	Write the feed methods of reflector antennas.	[3]
g)	Write the principle of pattern multiplication.	[2]
h)	Define Broadside and End fire arrays.	[3]
i)	What are the Refraction and reflection?	[2]
j)	Explain critical frequency.	[3]

PART - B

(50 Marks)

2.a)	What is beam area? Define and derive the beam efficiency of antenna.	[5+5]
b)	Derive the radiating resistance and radiated power of half-wave dipole.	

OR

3.a)	What is the effective area of a half wave dipole operating at 500 MHz.	[4+6]
b)	Derive the radiating resistance and radiated power of Half-wave monopole.	
4.a)	Explain design and the operation principle of helical antenna with neat diagram.	[6+4]
b)	Explain design and the operation principle of Pyramidal Horn antenna.	

OR

5.a)	Explain the operation of any one VHF antenna and write their Characteristics.	[6+4]
b)	Design Yag-Uda antenna of six elements to provide a gain of 12 dB, if the operating frequency is 200MHz.	
6.a)	Explain the principle and operation of microstrip antenna.	[5+5]
b)	Explain about parabolic reflector with neat diagrams.	

OR

7.a)	Write applications of rectangular patch antenna, and Explain about rectangular patch antenna with neat diagrams.	[6+4]
b)	Find the power gain of paraboloid reflector antenna with 1.8m diameter operating at 4GHz.	

8.a)	Explain about Near and Far field measurements of an antenna.	
b)	Discuss about the Measurement of antenna patterns in detail.	[5+5]

OR

9.a)	Write the expression of principle of pattern multiplication and consider an array of eight elements.	
b)	Write the differences between Broadside array and End-fire array.	[5+5]

10.a)	Explain about reflection factors of earth and write the wave tilt of the ground wave.	
b)	Explain maximum usable frequency (MUF) and skip distance.	[6+4]

OR

11.a)	Explain about Tropospheric wave propagation.	
b)	Discuss about the atmospheric effects in space wave propagation.	[5+5]

---ooOoo---