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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SECOND SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2017

(Electronics & Communication Engineering)

(Microwave & Television Engineering)

(Telecommunication Engineering)

01EC6204 Antenna Theory and Design

Answer *any two full* questions from *each* part.

Limit answers to the required points.

Max. Marks: 60 Duration: 3 hours

PART A

1.	a.	Derive Helmholtz equation in terms of magnetic vector potential.	4.5
	b.	Explain the axial mode and normal mode of operation of a helical antenna.	4.5
2.	a.	Explain the steps involved in the design of a T - Match Circuit.	4.5
	b.	With the help of neat sketches explain the working of a Rhombic Antenna. List its important features.	4.5
3.	a.	Derive expressions for the fields radiated by a circular loop antenna.	9

PART B

4.	a.	Derive Hallen's Integral Equation. Discuss about the importance of Hallen's equation.	9
5.	a.	Explain the Field Equivalence Principle in detail.	6
	b.	List the important features of a Yagi-Uda Antenna.	3
6.	a.	Discuss about any two feeding techniques for Microstrip antenna.	4.5
	b.	Design a rectangular Microstrip antenna resonating at 2 GHz. The antenna uses a substrate with a dielectric constant of 10.2 and the height of the substrate is 0.3 cm.	4.5

PART C

7.	a.	Explain the working of Lens Antenna. What do mean by zoning in Lens Antenna?	6
	b.	Discuss about the Frequency Sampling Technique for Array Design.	6

8.	a.	Explain the working of Spiral Antenna. Derive appropriate expressions.	6
	b.	Explain how an Antenna Array is designed using Schelkunnoff's Zero Placement technique.	6
9.	a.	What do you mean by beam steering? Explain how electronic steering is done?	6
	b.	List the steps involved in the design of a Log Periodic Antenna.	6