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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SECOND SEMESTER M. TECH DEGREE EXAMINATION, DECEMBER 2018

Branch: Electronics and Communication Engineering

Stream(s):

1. *Microwave and Television Engineering*
2. *Telecommunication Engineering*

Course Code & Name: 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.		Derive the relation between magnetic vector potential and radiation fields in antennas, stating clearly Helmholtz equation and Lorentz conditions.	(9)
2.		Analyze the working of a circular loop antenna and list its applications.	(9)
3.	a.	Differentiate between V - antenna and rhombic antenna.	(5)
	b.	Distinguish between circular and elliptical polarization.	(4)

PART B

4.		Derive Hallen's integral equation for current induced in a dipole antenna for the delta gap model.	(9)
5.	a.	Write the design steps for optimum horn antenna radiation.	(6)
	b.	Explain the delta gap model in dipole antennas.	(3)
6.	a.	State Huygens' Principle and discuss Field equivalence in aperture antennas.	(5)
	b.	Distinguish between self and mutual impedances of coupled antennas.	(4)

PART C

7.	a.	With the help of diagrams, explain the working of a parabolic reflector antenna.	(12)
8.	a.	Describe Schelkunoff polynomial method for antenna synthesis.	(9)
	b.	State Rumsey's principle for frequency independent antennas.	(3)
9.		Describe the concept of beam steering and adaptive beam forming in antennas.	(12)