R19

Reg. No:

ANTENNAS AND WAVE PROPAGATION
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Explain Radiation Intensity and Antenna Gain.	L1	6M
	b	An antenna has a radiation resistance is 72Ω and a loss resistance is 8Ω if the power gain is 16. Calculate the directivity of the antenna.	L3	6M

OR

2	a	Explain Antenna Directivity and Effective aperture of an Antenna.	L2	6M
	b	A dipole having a length of 3 cm is operated at 1 GHz. The efficiency factor K=0.6. Calculate the radiation resistance, Antenna gain and effective aperture.	L3	6M

UNIT-II

3	a	Discuss about the helical antenna geometry, axial mode of radiation and its applications.	L2	6M
	b	Write short notes on Helical antenna and its Modes.	L1	6M

OR

4	a	Design Yagi-Uda antenna of six elements to provide a gain of 12dB if the operating frequency is 200 MHz.	L6	6M
	b	Discuss about the Folded dipole antenna and its input impedance .	L2	6M

UNIT-III

5	a	Discuss the construction of rectangular patch antenna.	L2	6M
	b	A parabolic reflector antenna with diameter 1.8 m is designed to operate at frequency of 6 GHz and illumination efficiency of 0.65. Calculate the FNBW and antenna gain .	L2	6M

OR

6	a	Explain about the Reciprocity with respect to antenna measurements.	L2	6M
	b	Explain near & far fields with respect to antenna measurements.	L3	6M

UNIT-IV

7	a	Derive the expression for far field pattern of an array of two isotropic point sources at equal amplitude& same phase.	L4	6M
	b	What is antenna array? Define point sources and uniform linear array.	L1	6M

OR

8	a	Design Array factor of n- element uniform linear array.	L4	6M
	b	Compare the Broad side array and end fire array.	L5	6M

UNIT-V

9	a	Explain the Structure of Ground wave propagation with neat sketch.	L3	6M
	b	Explain Virtual height and its significance.	L2	6M

OR

10	a	Explain Reflection and Refraction of sky waves by ionosphere.	L4	6M
	b	Determine the maximum usable frequency for a critical frequency of 20 MHz and an angle of incidence of 35^0 .	L4	6M

*** END ***