E **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 51Q02

M.E. DEGREE EXAMINATION, APRIL 2019

First Semester

Communication Systems

15PCM102-ADVANCED RADIATION SYSTEMS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1.	(a)	Explain in detail about balance to unbalance transformer.	CO1- U	(20)
		Or		
	(b)	List out the numerical techniques useful for analysis of antenna. Explain one of them in detail.	CO1- U	(20)
2.	(a)	Explain the Field equivalence principle of aperture antennas.	CO2- U	(20)
		Or		
	(b)	Explain the different types of horn antenna used for radiation. Explain the working of pyramidal horn antenna and derive the expression for directivity.	CO2- U	(20)
3.	(a)	Find the beam width between the nulls and half power points of the radiation pattern of a parabolid operating at 10GHz, which has a mouth diameter of 0.15m. Also find power gain.	CO3- App	(20)
		Or		
	(b)	Derive the expression for Array factor of N element linear array with uniform amplitude and spacing between elements.	CO3- App	(20)

4.	(a)	Explain the radiation principle of a rectangular patch antenna with a neat diagram.	CO4- U	(20)
		Or		
	(b)	With a neat diagram explain the radiation mechanism of a patch antenna. What are the excitation techniques available? Explain.	CO4- U	(20)
5.	(a)	Is current distribution measurement important in an antenna? Justify. How it is being measured? Explain it through an experiment setup.	CO5- Ana	(20)
		Or		
	(b)	Design log periodic antenna array to cover a frequency range of 84 to 200 MHz and to have a 7.5dB gain. Compute the required element lengths and spacing for optimal working.	CO5- Ana	(20)