GUJARAT TECHNOLOGICAL UNIVERSITY	Y
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BE - SEMESTER-VI- EXAMINATION - SUMMER 2016

Subject Code: 161003

Date: 09/05/2016

Subje	ct Name: Antenna & Wav	e Propogation

Time: 10:30 AM to 01:00 PM

Total Marks: 70

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q.1	(a) (b)	Explain impedance-bandwidth, polarization, and FNBW.		
•	(D)	Derive necessary equations for E and H field of Hair wave dipole antenna.	07	
Q.2	(a)	a) An antenna has an effective height of 100 meter and r.m.s. current at the base 400 ampere at 40 KHz if total resistance of antenna circuit is 1.12 ohm. Wha the power radiated and efficiency of an antenna.		
	(b)	What do you mean by an effective aperture for scenario of transmitting antenna transmitting in free space and fraction of it is received, find out the maximum effective aperture. Also discuss about various types of aperture.	07	
	(b)	For a 2.7 meter diameter parabolic reflector used in terrestrial link at 7.75GHz calculate and 3dB bandwidth of an antenna having $a_e/a_p = 0.65$.	07	
Q.3	(a) (b)	Explain in detail principle of pattern multiplication with suitable Example. Derive necessary equations for E and H field of loop antenna.	07 07	
03	(a)	UK Derive an Equation of Electric field for an array of a isotropic point sources	07	
Q.J	(a) (b)	Do the analyses of an end fire antenna using it find out beam width of 4 and 10 element array separated by half wave length and compare your results.		
Q.4	(a)	Explain in brief about folded dipole antenna and also give design steps of an yagi udda antenna	07	
	(b)	Explain in brief about UWB antenna and how to measure its pattern. OR	07	
Q.4	(a)	Write short note on(1) Smart antenna (2) Terminal impedance measurement method	07	
	(b)	Do the analysis of Micro strip Antenna list its applications also give propagation mode it use.	07	
Q.5	(a)	Write short note on (1) lens Antenna (2) Helical Antenna	07	
	(b)	Explain how slot can be used for creating frequency independent antenna OR	07	
Q.5	(a)	Discuss various type of feed arrangement for parabolic disc antenna using horn antenna, Design a horn antenna with HPBW 10^{0} in both plane also find its gain in dB.	07	
	(b)	Define MUF, Explain in brief about ionospheric propagation and determine frequency of propagation through ionosphere having refraction index of 0.5 and electron density of $400/\text{cm}^3$	07	
