Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VI (OLD).EXAMINATION – WINTER 2016

Subject Code: 161003 Date: 22/10/2016

Subject Name: Antenna & Wave 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)**	Define Oscillating Dipole. Derive **E** and **H** field components due to Oscillating Dipole in spherical co-ordinate systems.	**07**
	(b)	Enlist applications of reciprocity theorems to antennas. Briefly explain any two applications.	**07**
Q.2	**(a)**	Briefly explain end-fire array with necessary equations.	**07**
	(b)	Explain Antenna Temperature with necessary mathematical expressions.	**07**
		OR	
	(b)	Write short note on space wave propagation.	**07**
Q.3	**(a)**	Define the terms Antenna Temperature, Beam width, HPBW and Beam Efficiency.	**07**
	(b)	Write short note on Yagi-uda Antenna Array.	**07**
		OR	
Q.3	**(a)**	Explain Cassegrain feed system with neat sketch.	**07**
	(b)	A directional antenna with 10 dB gain radiates 500 watts. The receiving antenna at 15 km distance receives 2 micro-watts. Find the effective area of the receiving antenna. Assume negligible ground and ionospheric reflections.	**07**
Q.4	**(a)**	With neat sketches briefly explain reflector lens antennas. Also write its applications.	**07**
	(b)	Explain Structure of troposphere and ionosphere.	**07**
		OR	
Q.4	**(a)**	Write short note on Embedded Antennas.	**07**
	(b)	Find the radiation efficiency of a 1 m diameter loop ($C = \pi$ m) of 10 mm diameter copper wire at (i) 1 MHz and (b) 10 MHz.	**07**
Q.5	**(a)**	Write short note corrugated Horns.	**07**
	(b)	State and explain Babinets principle with example.	**07**
		OR	
Q.5	**(a)**	With neat sketches briefly explain patch antennas. Also write its applications.	**07**
	(b)	Write short note on antenna feeding methods.	**07**

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