

Enrolment No./Seat No \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI EXAMINATION – SUMMER 2025

Subject Code:2161003

Date:22-05-2025

Subject Name:Antenna & Wave Propagation

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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1 (a) Define terms with respect to Antenna: 1) Antenna efficiency 2) Beam width 3) Return Loss 03  
(b) What is Antenna basic equation? explain with neat diagram. 04  
(c) Explain current distribution in half wave simple dipole antenna. 07
- Q.2 (a) Explain reflector antenna with their major mechanism. 03  
(b) Explain design consideration of Lens antenna. 04  
(c) Explain E and H field analysis of a halfwave electric dipole. 07
- OR**
- (c) Write note on –“Importance of Dolph-Tchebysheff amplitude distribution for Linear array”. 07
- Q.3 (a) Explain the working principle of small loop antenna. 03  
(b) Compare Binomial and Optimum array distribution. 04  
(c) Explain characteristics of helical antenna using band width equation. 07
- OR**
- Q.3 (a) Explain the significance of Friss formula. 03  
(b) Explain smart antenna with their applications. 04  
(c) Write note on antenna measurement techniques. 07
- Q.4 (a) Explain the working of Horn antenna with neat diagram. 03  
(b) Explain special types of antennas with applications. 04  
(c) What is Microstrip antenna? explain various feed techniques of Microstrip antenna. 07
- OR**
- Q.4 (a) Explain Effective length and Effective aperture of an antenna. 03  
(b) Explain Babinet’s Principle with application. 04  
(c) Explain slot antenna working with applications. 07
- Q.5 (a) Write note on log spiral antenna 03  
(b) Explain advantages of Monopole antenna. 04  
(c) Describe the design aspects for Yagi-Uda antenna. 07
- OR**
- Q.5 (a) Write note on fractal Antenna 03  
(b) Write note on Loop Antenna 04  
(c) Write note on Broadband antenna. 07