

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (OLD) EXAMINATION – SUMMER 2022****Subject Code:161003****Date:01/06/2022****Subject Name:Antenna and 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 following terms: 1) HPBW 2) Antenna radiation efficiency 3) Radiation density 4) Beam solid angle 5) Directivity 6) Beam area 7) Antenna temperature **07**
- (b) Explain reciprocity theorems to antennas with applications. **07**

- Q.2** (a) Define Oscillating Dipole. Derive E and H field components due to Oscillating Dipole in spherical co-ordinate systems. **07**
- (b) Difference between End fire and Broadside array **07**

OR

- (b) Explain design consideration for Yagi-uda Antenna Array. **07**
- Q.3** (a) Explain measurement of radiation patterns, gain and phase polarization. **07**
- (b) Write note on pattern multiplication principle **07**

OR

- Q.3** (a) Write note on Dolph-Tchebysheff amplitude distribution for Linear array **07**
- (b) Explain Structure of troposphere and ionosphere. **07**

- Q.4** (a) What is Rumzey's principle? Explain with neat sketch log periodic dipole array. **07**
- (b) What is the importance of parabolic structure as a reflector in antenna? Explain feed techniques in reflector antenna. **07**

OR

- Q.4** (a) Explain Helical antenna Geometry with neat diagram. Also explain various modes of propagation in helical antenna. **07**
- (b) Explain Binomial array **07**

- Q.5** (a) Define the following terms for radio wave propagation. 1) Virtual height 2) MUF 3) Critical frequency 4) Skip distance 5) Fading 6) Multi hop propagation 7) OWF **07**

- (b) Write note on Microstrip patch antennas with their application **07**

OR

- Q.5** (a) Write note on Different modes of Radio wave propagation **07**
- (b) Loop Antenna **07**
