

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (OLD) EXAMINATION – SUMMER 2019****Subject Code: 171007****Date: 10/05/2019****Subject Name: Satellite Communication****Time: 02:30 PM TO 05:00 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) State the advantages and disadvantages of Satellite Communication. **07**  
 (b) State Kepler's laws of planetary motion **07**
- Q.2** (a) Define Apogee and Perigee and locate the same on an elliptical orbit. A satellite is in an elliptical orbit with a perigee of 1000 km and an apogee of 4000 km. Evaluate the semi major axis, Time period of oscillation, Time in HH:MM:SS format, linear velocity at apogee and perigee both, and angular velocity. **07**  
 (b) Write a short note on Satellite antennas. **07**
- OR**
- (b) Explain Kepler's six element set that helps to locate a satellite in orbit. **07**
- Q.3** (a) Explain with the help of a diagram the Eccentric anomaly. Also derive its relation with mean anomaly using Perigee as the point of reference. **07**  
 (b) How orbital perturbations play a significant role in satellite communication? **07**
- OR**
- Q.3** (a) What are the different anomalies for satellite communication? Describe. **07**  
 (b) Write a short note on azimuthal and elevation angle. **07**
- Q.4** (a) Write a short note on TTC & M. **07**  
 (b) Explain the simplified double bend conversion transponder for 14/11 Ghz band. **07**
- OR**
- Q.4** (a) Explain the different types of stabilization techniques using examples. **07**  
 (b) What is the significance of a transponder in a satellite system? **07**
- Q.5** (a) Write a short note on Satellite Antennas. **07**  
 (b) Explain polarization. What kind of polarization is observed in satellite systems? **07**
- OR**
- Q.5** (a) Explain about the working of the VSAT network. **07**  
 (b) How does a GPS system work? **07**

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