

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII • EXAMINATION – WINTER 2013****Subject Code: 171007****Date: 03-12-2013****Subject Name: Satellite Communication****Time: 10:30 TO 01:00****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) Explain different Satellite services. **07**  
(b) Explain the Keplerian element set. **07**

- Q.2** (a) Calculate the radius of a geostationary satellite. **07**  
(b) In a satellite link, thermal noise in an earth station results in a ratio of 25.0 dB. A signal is received from a transponder with a carrier to noise ratio of 20.0 dB. Find the value of overall (C/N)<sub>o</sub> at the earth station. **07**

**OR**

- (b) Calculate the gain of a 3-m paraboloidal antenna with an aperture efficiency of 0.55 operating at a frequency of 12 GHz. **07**

- Q.3** (a) Explain what is meant by satellite attitude and briefly describe two forms of attitude Control. **07**  
(b) Draw and explain the TT&C. **07**

**OR**

- Q.3** (a) Give the list of all Multiple Access System used for satellite communication. Explain any one of them in detail and give comparison of any three. **07**  
(b) Explain what is XPD ? How XPD are predicted ? Also Draw and Explain properly The Canting Angle and Tilt Angle with required equations. **07**

- Q.4** (a) How the error control done in Digital DBS-TV? Explain it. **07**  
(b) Explain Orbit Consideration with respect to Non-Geostationary Satellite Orbit (NGSO). **07**

**OR**

- Q.4** (a) Write short notes on Access Control Protocols used in VSAT network. **07**  
(b) Write short notes on Master Control Station required for Direct Broadcast Satellite Television (DBS-TV) system. **07**

- Q.5** (a) Explain how to compute uplink and downlink C/N ratios for a typical satellite link. **07**  
(b) Write short notes on GPS Receivers with using simplified block diagram. **07**

**OR**

- Q.5** (a) What is GPS? Explain principle of GPS position location. Also explain signal generation in GPS. **07**  
(b) Draw and Explain the block diagram of satellite transponder in detail. **07**

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