

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 171007****Date: 29-11-2014****Subject Name: Satellite Communication****Time: 10:30 am - 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) Explain different Satellite services. What is footprint? What is the difference between polar orbit and geostationary orbit? **07**
(b) Calculate the radius of a circular orbit for which the period is one day. **07**

- Q.2** (a) An earth station is located at latitude 30°S and longitude 130°E . Calculate the antenna-look angles for a satellite at 156°E . **07**
(b) Determine the angle of tilt required for a polar mount used with an earth station at latitude 49° north. Assume a spherical earth of mean radius 6371 km, and ignore earth-station altitude. **07**

OR

- (b) An antenna has a noise temperature of 35 K and is matched into a receiver which has a noise temperature of 100 K. Calculate (i) the noise power density and (ii) the noise power for a bandwidth of 36 MHz. **07**

- Q.3** (a) Write a short note on Equipment reliability and space qualification for Satellite Communication. **07**
(b) Draw and explain TT&C. **07**

OR

- Q.3** (a) Explain the block diagram of Satellite Transponder. Also explain the frequency reuse technique for Transponder. **07**
(b) Explain Cross-Polarization Discrimination. **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) What is VSAT ? List the application of VSAT. Also Draw and explain the architecture of VSAT system. **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 differences between: **07**
(i) Attitude control and orbital control
(ii) East west and north south station keeping maneuvers.

OR

- Q.5** (a) Explain the spade system. **07**
(b) Explain GPS receiver operation in short. **07**
