

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. VIIth Semester–Examination – Nov- 2011

Subject code: 171007

Subject Name: Satellite Communication

Date: 29/11/2011

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) Which are the different types of orbits used for satellite Communication? Explain in detail. **07**

(b) What do you mean by multiple access technique? Explain Time Division Multiple Access in detail. **07**

Q.2 (a) Explain three laws of Kepler's for planetary motion in detail. **07**

(b) An earth station situated in the Bangalore ,needs to calculate the Look angles to a geostationary satellite in the Indian ocean operated at INSAT. The details of the earth station site and the satellite are as follows: **07**

Earth station latitude and Longitude are 52.0° N and 0°
Satellite longitude (subsatellite point) is 66.0° E

OR

(b) What is the value of XPD at 0.01% of the time for a 12 GHz link that experiences 7dB attenuation for this period of time? The elevation angle is 30° . Calculate the XPD for tilt angles of 20° and 0° . **07**

Q.3 (a) What is the purpose of Telemetry, Tracking, Command, and Monitoring in satellite communication? Explain in detail. **07**

(b) Explain calculation of link margins for a VSAT Star network with suitable equations. **07**

OR

Q.3 (a) Write short notes on Satellite Antennas. Support your answer by explaining main types of antennas are used in satellites **07**

(b) Write short notes on Access Control Protocols used in VSAT network. **07**

Q.4 (a) How the prediction of rain attenuation is possible? Also state the calculation steps of Long Term Statistics for NGSO System. **07**

(b) Write Short notes on Operational Non-Geostationary Satellite Orbit (NGSO) Constellation design. **07**

OR

Q.4 (a) Explain Orbit Consideration with respect to Non-Geostationary Satellite Orbit (NGSO). **07**

(b) Write short notes on Demand Access Multiple Access system. **07**

Q.5 (a) Explain following terms in detail regarding GPS. **07**

(1) Signal levels

(2) Timing Accuracy

(b) Write short notes on Master Control Station required for Direct Broadcast Satellite Television (DBS-TV) system. **07**

OR

Q.5 (a) Write short notes on GPS Receivers with using simplified block diagram. **07**

(b) How the error control done in Digital DBS-TV? Explain it. **07**
