Seat No.:	Enrolment No
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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code:2720506 Date: 31/05/2016

**Subject Name: Satellite Communication** 

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.

Q.1	(a)	State the laws that govern planetary motion. Derive the expression for Time	07
	(b)	period of oscillation. What forces control the stability of the satellite in orbit? Explain them.	07
Q.2		Using a circumscribed circle, locate a satellite in orbit. Using a neat sketch, show and explain (1) Low Earth Orbit (2) High Eccentricity Orbit (3) Polar Orbit	07 07
		OR	07
Q.3	(b) (a) (b)	Derive the expressions for Elevation and Azimuthal angle of a satellite.  Explain the different types of losses covered in the Link Budget Analysis  Discuss different methods to launch a vehicle into its destined orbit.  OR	07 07
Q.3	(a) (b)	Write a short note on satellite subsystems.  Define Elevation and Azimuthal angles of a satellite. Look angles for the Earth station is at latitude 52°N and 0° E longitude at London, England, Dockyard region. The look angle for the satellite is at latitude 0°N and 66° E longitude at Geostationary INTELSAT, IOR primary. Find the central angle, the elevation angle, the intermediate angle and the azimuthal angle.	07 07
Q.4	(a) (b)	How does the principle of a spinner satellite differ from a 3-axis stabilized satellite?  Which error controlling techniques are used in DBS TV Transmitter-Receiver?  OR	07
Q.4	(a) (b)	Explain attenuation due to rain and ice effects.  What is the significance of a transponder circuit? Explain single conversion and double conversion transponder circuits.	07 07
Q.5	(a) (b)	Differentiate amongst spectrum spread for a TDMA, CDMA and FDMA. Explain the working of the GPS system using diagrams.  OR	07 07
Q.5	(a) (b)	Write a short note on Equipment Reliability and Space Qualification. Explain Split Two Way Implementation in VSAT network. How to avoid interferences in VSAT network?	07 07
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