GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012

Subject code: 171007   **Date: 28/12/2012**
Subject Name: Satellite communication
Time: 10.30 am - 01.00 pm   **Total Marks: 70**
Instructions:
1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What are kepler's three laws of planetary motion? Give the mathematical formulation of kepler's third law of planetary motion.	**07**
	(b)	What is the earth's oblateness, sun and moon's effects on artificial satellite's orbit.	**07**
Q.2	**(a)**	A satellite is in an elliptical orbit with a perigee of 1000km and an apogee of 4000km. using mean earth radius of 6378.14 km, find the period of the orbit in hours, minutes, and seconds, and the eccentricity of the orbit.	**07**
	(b)	Write a short note on attitude control system.	**07**

OR

	(b)	A satellite at a distance of 40,000 km from a point on the earth's surface radiates a power of 10 W from an antenna with a gain of 17dB in the direction of the observer. Find the flux density at the receiver point, and the power received by an antenna at this point with an effective area of 10 m^2	**07**
Q.3	**(a)**	Write a short note on satellite antennas.	**07**
	(b)	Discuss in detail: The parameter that effect the selection of satellite launch vehicle.	**07**

OR

Q.3	**(a)**	List the advantage and disadvantage of FDMA,TDMA and CDMA multiple access techniques.	**07**
	(b)	List the propagation effects that are not associated with hydrometeors. Explain any two of them in details.	**07**
Q.4	**(a)**	Write a short note on demand access multiple access techniques.	**07**
	(b)	Write a short note on access control protocols in VSAT systems.	**07**

OR

Q.4	**(a)**	Explain Elliptical orbits and Molniya orbit with their uses.	**07**
Q.4	**(b)**	Write a short note on error control in digital DBS-TV	**07**
Q.5	**(a)**	Write a short note on GPS position location principles.	**07**
	(b)	List the step for design procedure for satellite communication link.	**07**

OR

Q.5	**(a)**	Explain in detail: GPS receiver operation.	**07**
	(b)	Describe the fooling satellite NGSO Systems (i) Iridium (ii) Orbcomm.	**07**

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