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GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (OLD) EXAMINATION – WINTER 2018

Subject Code: 171007   **Date: 15/11/2018**
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)**	List out various multiple access techniques and compare any two of them.	**07**
	(b)	What is GPS? Explain the principles of GPS position location. Also mention various applications of GPS.	**07**
Q.2	**(a)**	What are different types of orbit used for satellite communication? Explain each one in brief.	**07**
	(b)	With the help of necessary diagrams justify the role of *Telemetry, Tracking, Command & Monitoring* in satellite communication.	**07**
		OR	
	(b)	List out various orbital elements and explain each one in detail.	**07**
Q.3	**(a)**	Why transponder is called so? Draw block diagram of satellite transponder. Explain each block in detail.	**07**
	(b)	What is uplink? Draw and explain Uplink block diagram. Also explain uplink power budget design.	**07**
		OR	
Q.3	**(a)**	List out & explain in brief various types of antenna used in space segment.	**07**
	(b)	Define downlink. Represent the same pictorially. Derive the power budget calculations for downlink.	**07**

Q.4	**(a)**	Explain following in brief:
		   i. Solar eclipse of satellite
		   ii. Sun transit outage
			07

	(b)	Write a detailed note on system noise temperature and G/T ratio with respect to satellite link design.	**07**
		OR	
Q.4	**(a)**	Write a detailed note on demand access multiple access technique.	**07**
	(b)	Illustrate the concept of XPD & its prediction. Compare XPD with XPI.	**07**
Q.5	**(a)**	Write short notes on access control protocols used in VSAT network.	**07**
	(b)	Draw and explain in detail the Direct Broadcast Satellite TV system.	**07**
		OR	
Q.5	**(a)**	Draw & explain in brief block diagram of simplified GPS receiver. Also draw block diagram of signal generation in a satellite.	**07**
	(b)	How error control is performed in Digital DBS-TV? Explain with suitable block diagram.	**07**

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