

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:2171007

Date:21-05-2025

Subject Name:Satellite Communication

Time:02:30 PM TO 05:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) State briefly the areas of application for which Satellite Communication systems is best suited as compared to Optical fiber communication systems.	03
	(b) List the various advantages and drawbacks of satellite communication.	04
	(c) Define: (i) Apogee (ii) Line of apsides (iii) Perigee (iv) Retrograde Orbit (v) Prograde Orbit (vi) Mean anomaly (vii) True anomaly	07
Q.2	(a) Explain the effect of Atmospheric drag on satellite orbit.	03
	(b) Explain Rain attenuation for satellite communication.	04
	(c) List the orbital elements and explain each of them in detail. Also give their significance in orbital maintenance.	07
	OR	
	(c) Calculate the radius of a geostationary satellite.	07
Q.3	(a) List major types of satellite orbits.	03
	(b) Explain Community Antenna TV system(CATV).	04
	(c) Explain in detail a Satellite Transponder.	07
	OR	
Q.3	(a) Explain Cross Polarization Discrimination.	03
	(b) Explain the difference between Attitude Control and Station Keeping.	04
	(c) Draw and Explain TT and C.	07
Q.4	(a) Explain the difference between Rain depolarization and Ice depolarization.	03
	(b) What is spinning Satellite stabilization?	04
	(c) Explain the Spade system.	07
	OR	
Q.4	(a) Explain the technique of TDMA. How TDMA network is advantageous over FDMA network?	03
	(b) Write a note on Equivalent Isotropic Radiated Power (EIRP).	04
	(c) List the types of Multiple access systems used in satellite communication and give its comparison.	07
Q.5	(a) What is GPS? Explain principle of GPS position location.	03
	(b) Explain how error control is done for Digital DBS-TV?	04
	(c) Draw and explain Digital DBS TV in detail.	07

OR

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| Q.5 | (a) Explain VSAT and its applications. | 03 |
| | (b) Write on DVB standards. | 04 |
| | (c) Write a detail note on GPS. | 07 |
