

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024

Subject Code:2171007

Date:28-05-2024

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) Define following: (1) Apogee (2) Line of apsides (3) Inclination	03
(b) Draw and explain the block diagram of satellite communication in detail.	04
(c) State and explain kepler's three laws of planetary motion	07
Q.2 (a) Explain the Effect of a non-spherical earth on orbital path of satellite.	03
(b) Write a short note on Earth eclipse of Satellite.	04
(c) Write a short note on following: (1) Geostationary Orbits (2) Rain Attenuation	07
OR	
(c) Define Satellite Look Angles, also derive the Equation of Satellite look angles.	07
Q.3 (a) Write a short note on atmospheric losses in radio wave propagation.	03
(b) Explain how depolarization is caused by ionosphere, rain and ice.	04
(c) Explain in detail Telemetry, Tracking, Command, and Monitoring in Satellite communication?	07
OR	
Q.3 (a) Briefly explain Antenna Misalignment losses.	03
(b) Differentiate between attitude control and orbital control.	04
(c) Write a short-note on Satellite transponders.	07
Q.4 (a) Briefly explain Fixed atmospheric and ionospheric losses.	03
(b) The range between a ground station and a satellite is 42,000 km. Calculate the free-space loss at a frequency of 6 GHz.	04
(c) Explain in detail Master Antenna TV System.	07
OR	
Q.4 (a) What is Demand Assigned FDMA? Explain in short.	03
(b) Briefly explain Community Antenna TV system (CATV).	04
(c) Define Downlink. Draw a pictorial representation of a Downlink. Show the power budget calculations for a downlink path.	07

- Q.5** (a) Define Equivalent Isotropic Radiated Power (EIRP) with equation. **03**
(b) What is GPS? How GPS locate the position of object on earth surface? **04**
(c) Compare FDMA, TDMA and CDMA techniques. **07**
- OR**
- Q.5** (a) State the difference between multiplexing techniques and multiple access techniques in satellite communication. **03**
(b) Write a short note on VSAT. **04**
(c) Write a short note on DBS TV systems. **07**
