

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-VII(NEW) • EXAMINATION – WINTER 2016**

**Subject Code:2173207****Date:21/11/2016****Subject Name:Satellite Communciation & Networking****Time:10.30 AM to 1.00 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) What are kepler's three laws of planetary motion? Give the mathematical formulation of kepler's third law of planetary motion. **07**
- (b) Describe briefly the main advantages of satellite communication and discuss the applications of satellite communication **07**
- Q.2** (a) Describe the earth's oblateness, sun and moon's effects on artificial satellite's orbit? **07**
- (b) An earth station is located at latitude 30°S and longitude 130°E. Calculate the antenna-look angles for a satellite at 156°E. **07**
- OR**
- (b) A satellite is in an elliptical orbit with a perigee of 1000 km and an apogee of 4000 km. 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**
- Q.3** (a) What is meant by rain attenuation? Derive an equation for the same. **07**
- (b) What is Polarization Discrimination? **07**
- OR**
- Q.3** (a) Explain atmospheric losses in detail. **07**
- (b) Write a note on Rain depolarization. **07**
- Q.4** (a) Draw and explain the block diagram of satellite transponder in detail. **07**
- (b) What is the purpose of Telemetry, Tracking, Command in satellite communication? Explain in detail. **07**
- OR**
- Q.4** (a) Explain how to compute uplink and downlink C/N ratio for a typical satellite link. **07**
- (b) Draw a block diagram for transmit receive type earth station. **07**
- Q.5** (a) List the types of parameters effective in downlink of satellite .Also give its significance and arrange them in the equation for downlink. **07**
- (b) Give the list of all multiple access system used for satellite communication. Explain any one of them in detail and give comparison of any three. **07**
- OR**
- Q.5** (a) What are the main technical parameters used in measuring ATM performance. **07**
- (b) Explain asynchronous transfer mode in detail. **07**

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