

Subject Code: 2173207

Date: 19/11/2018

Subject Name: Satellite Communication & Networking

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.

MARKS

- Q.1**
- (a) List the types of Orbits used in the Satellite and give its Comparison. **03**
 - (b) Explain Elevation angle and Azimuth angle Calculation with necessary Equation. **04**
 - (c) What is Satellite communication? Draw and Explain the block diagram of Satellite Communication in detail. **07**
- Q.2**
- (a) Write short notes on Satellite Antennas. **03**
 - (b) Write a Short note on Telemetry, Tracking and Command in Satellite Communication. **04**
 - (c) What are Kepler's three laws of planetary motion? Give the mathematical formulation of Kepler's third law of planetary motion. **07**
- OR**
- (c) A satellite in an elliptical orbit around the earth has an apogee of 39,152 km and a perigee of 500 km. What is the orbital period of the satellite? Average earth radius is 6,378.137 km. **07**
- Q.3**
- (a) Write a short note on Receive-Only Home TV Systems. **03**
 - (b) With Necessary Equation and Diagram, Explain Limits of Visibility. **04**
 - (c) Explain the block diagram of Satellite Transponder. Also explain the frequency reuse technique for Transponder. **07**
- OR**
- Q.3**
- (a) Derive Friis transmission Equation for received power in Radio link. **03**
 - (b) Write a Short note on Polarization of Satellite Signals. **04**
 - (c) List various types of Control required to maintain the satellite in space and Explain any one in detail. **07**
- Q.4**
- (a) Discuss Antenna Misalignment Losses. **03**
 - (b) Explain Solar Eclipse of satellite and Sun Transit Outage. **04**
 - (c) Compare FDMA, TDMA and CDMA techniques. **07**
- OR**
- Q.4**
- (a) What is XPD and How XPD is predicted? **03**
 - (b) Discuss three-axis method of Satellite Stabilization. **04**
 - (c) Explain How to Compute Uplink and Downlink C/N Ratio for a typical Satellite Link. **07**
- Q.5**
- (a) Define Input Back-off and Output Back-off. **03**
 - (b) What do you mean by rain attenuation? Explain with necessary Equation. **04**
 - (c) Write a short note on ATM in Satellite Communication. **07**
- OR**
- Q.5**
- (a) List the advantage and disadvantage of TDMA. **03**
 - (b) Calculate overall C/N₀ for uplink and downlink C/N₀ ratio of 46 dB. **04**
 - (c) Write a short note on Satellite Link and TCP. **07**
