

# C. U. SHAH UNIVERSITY

## Winter Examination-2019

**Subject Name: Satellite Communication**

**Subject Code: 4TE06SCM1**

**Branch: B.Tech (EC)**

**Semester: 6**

**Date: 18/09/2019**

**Time: 10:30 To 01:30**

**Marks: 70**

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

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**Q-1 Attempt the following questions (14)**

- a) What is the function of fixed satellite services (FSS)?
- b) What is the function of Broadcasting satellite services (BSS)?
- c) What is the function of Mobile satellite services (MSS)?
- d) Where VHF band is used?
- e) Where L band is used?
- f) Where C band is used?
- g) Where Ku band is used?
- h) What is the full form of INTELSAT?
- i) Which are the different types of orbits used for satellite Communication?
- j) Define the term ascending nodes for earth orbiting satellites.
- k) Define the term descending nodes for earth orbiting satellites.
- l) Define the term subsatellite path for earth orbiting satellites.
- m) Define the term apogee for earth orbiting satellites.
- n) Define the term perigee for earth orbiting satellites.

**Attempt any four questions from Q-2 to Q-8**

**Q-2 Attempt all questions (14)**

- a) Explain Kepler's three laws of planetary motion with necessary diagrams and equations. **07**
- b) Write a note on Effects of a non-spherical earth on a satellite. **07**

**Q-3 Attempt all questions (14)**

- a) Write a note on Sidereal time. **07**
- b) What are the conditions for orbit to be geostationary? Calculate the height of the geostationary orbit. **07**

**Q-4 Attempt all questions (14)**

- a) A geostationary satellite is located at  $90^\circ\text{W}$ . Calculate the azimuth angle for an earth-station antenna at latitude  $35^\circ\text{N}$  and longitude  $100^\circ\text{W}$ . Also find the range and antenna elevation angle. **07**
- b) Explain in detail concept of polar mount antenna. Determine the angle of tilt required for a polar mount used with an earth station at latitude  $49^\circ$  north. Assume a spherical earth of mean radius 6371 km, and ignore **07**



