

# C.U.SHAH UNIVERSITY

## Summer Examination-2016

Subject Name: Satellite Communication

Subject Code: 4TE06SCM1

Branch: B.Tech (EC)

Semester: 6

Date: 17/05/2016

Time: 02:30 To 05:30

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**                      **Define the following terms:** **(14)**

- a) Subsatellite path
- b) Apogee
- c) Perigee
- d) Line of apsides
- e) Ascending node
- f) Descending node
- g) Line of nodes
- h) Payload
- i) Bus
- j) Transponder
- k) Nutation
- l) Feeder Loss
- m) TDMA
- n) FDMA

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

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

- a) Explain the advantages and disadvantages of satellite communication.
- b) State Kepler's three laws of planetary motion. Illustrate in each case their relevance to artificial satellites orbiting the earth.

**Q-3**                      **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  $100^\circ\text{W}$ .
- b) Write a short note on the solar eclipse of satellite and sun transit outage.

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

- a) 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 earth-station altitude.



- Q-5**      b) Explain MPEG Compression Standards in detail. **(14)**  
              **Attempt all questions**
- a) What is Spin stabilization of Satellite? Explain in detail.
- Q-6**      b) Explain Three-Axis Stabilization in detail. **(14)**  
              **Attempt all questions**
- a) Explain Transmit-receive stations with diagram.
- Q-7**      b) Explain Receive-Only Home TV Systems with diagram **(14)**  
              **Attempt all questions**
- a) Derive the equation for system noise for amplifier connected in cascade. An LNA is connected to a receiver which has a noise figure of 12 dB. The gain of the LNA is 40 dB, and its noise temperature is 120 K. Calculate the overall noise temperature referred to the LNA input.
- Q-8**      b) What is Spade System? Explain with necessary diagram. **(14)**  
              **Attempt all questions**
- a) Write a note on VSAT.
- b) Write a note on RADARSAT.

