(Following Roll No. to be filled by candidate)	
Roll No.	

M TECH
THIRD SEMESTER EXAMINATION 2016-2017
DCE042
SATELLITE COMMUNICATION

Time: 3 Hours Max. Marks: 100

Note:

- Attempt all questions.
- All questions are equal marks.
- All symbols have usual meaning.

1. Attempt any ***two*** of the following **[2x10]**

a. State kepler's three laws planetary motion. Explain their relevance to artificial satellites orbiting the earth. Explain Look Angle.

b. Determine the angle of tilt required for a polar mount used with an earth station altitude 49 degree north. Assume a spherical earth of mean radius 6371 Km and ignore earth station altitude.

c. Write brief notes on the advantages and disadvantages of using satellite in LEOs, MEOs and GEOs for mobile satellite communications.

2. Attempt any ***two*** of the following **[2x10]**

a. With a neat sketch, explain Telemetry, Tracking and command subsystem.

b. The EIRP of a 240W transponder is 57dBW. Calculated the approximate gain of the antennas. Suppose if this transponder is switched to 120W. What will be the new EIRP, Given the same antenna is used?

c. Explain the attitude and orbit control system of satellite with necessary diagram

3. Attempt any ***two*** of the following **[2x10]**

a. Explain uplink and downlink frequencies. Derive the relation for combined uplink and downlink C/N ratio.

b. A satellite transmits with EIRP of 46dBW. Calculate the received the carrier to noise ratio if bandwidth is 35MHz and receiver has a G/T of 25dB/K. Assume the distance between earth and the satellite is 35786km.

c. With a neat sketch, explain the power budget for a satellite link considering back off and rain fade margin.

4. Attempt any ***two*** of the following **[2x10]**

a. Draw and explain the block diagram of earth station.

b. How does the system noise temperature affect the performance? Derive the expression for overall system noise temperature at the receiving earth station.

c. With the help of block diagram describe the operation of VSAT system.

5. Write Short notes on **any** ***four*** of the following **[4x5]**

a. FDMA and TDMA
b. Satellite communication Applications
c. CDMA and its applications
d. SPADE system
e. GPS