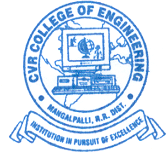
**CVR COLLEGE OF ENGINEERING**

*An UGC Autonomous Institution* - Affiliated to JNTUH

* + - 1. **B.Tech**. **IV** Year **I** Sem. **I MID Examinations –** August, 2018

Subject**: Satellite Communications**

**(Professional Elective –III)**

1. Date: 23/8/2018 Time: 2 hours Max. Marks: **40**
2. 
   * + - 1. **PART – A**
3. Answer **ALL** questions **5 *x* 2 = 10 M**
4. What do you mean by visibility test of satellite, give the equation for maximum angular separation between earth station and subsatellite point (SSP). (CO1)
5. If the altitude of a satellite is 10,255 km, then find its velocity (km/s) and its orbital period (H M S). (CO1)
6. What is the importance of G/T ratio? The gain of a receiver is 60.6 dB and its system noise temperature is 19 dBk, then find its G/T ratio. (CO2)
7. What is reliability of a satellite subsystem? Give the equation for the reliability of the device. (CO2)
8. Why TWTAs give poor performance in FDMA transponders? (CO3)

**PART – B**

1. Answer **ALL** questions **3 *x* 10 = 30 M**
2. a) What are the Orbital effects in communication system Performance and describe them in Detail. [5M] (CO1)

b) An earth station situated in the Docklands of London, England, needs to calculate the look angle to a geostationary satellite in the Indian Ocean operated by Intelsat. The details of the earth station site and the satellite are as follows:

Earth station latitude and longitude are 52.00 N and 00

Satellite longitude (sub satellite point) is 66.00 E. [5M] (CO1)

(OR)

1. a) What are the methods used to place a satellite in to a geostationary orbit.[5M] (CO1)
2. What are the various applications of satellite communication systems? [5M] (CO1)
3. a) Draw the Block diagram of simplified satellite earth station receiver and derive an equation for its system noise temperature. [5M] (CO2)

b) A 4GHz satellite Receiver has: Tin = 25 k, TRF = 50 k, TIF = 1000 k, Tm = 500 k, and GRF = 23 dB, GIF = 30 dB. Calculate the system noise temperature, assuming the mixer has a gain of GM = 0 dB. Recalculate the system Noise temperature when the mixer has 10 dB loss.

[5M] (CO2)

(OR)

1. a)What is the significance of bathtub curve and describe various redundancy connections used in a satellites. [5M] (CO2)

b) Draw the block diagram of TTC&M and describe in detail. [5M] (CO2)

1. Prove that inter-modulation increases in proportion to the cubes of the signal power in a FDMA system. [10M] (CO3)

(OR)

1. What is the importance of back-off loss in FDMA system and give an equation for overall C/N ratio in the earth station receiver in terms of (C/N)IM, (C/N)DN and (C/N)UP and mention its significance. [10M] (CO3)