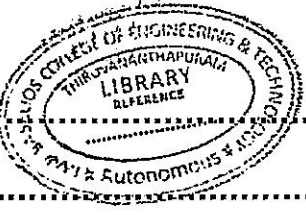


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N – 6641

Reg. No. : .....



Name : .....

**Eighth Semester B.Tech. Degree Examination, May 2022**

**08.804 : SATELLITE AND MOBILE COMMUNICATION (T)**

**(2008 Scheme)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer **all** questions, each carries **4** marks.

1. What are geostationary satellites and its advantages
2. A satellite TV signal occupies the full transponder bandwidth of 36 MHz and it must provide a C/N ratio at the destination earth station of 22 dB. Given that the total transmission loss is 210 dB and the destination earth station G/T ratio is 31 dB/K. Calculate the satellite EIRP required. Given value k in dB is – 228.6 dB.
3. Explain the reasons as to why uplinking frequency is different than the downlinking frequency
4. Explain how sectoring improves the capacity of cellular system.
5. Briefly list the factors influencing small scale fading.
6. Describe Okumara outdoor propagation model.
7. Explain time dispersion and frequency selective fading.
8. Write the importance of synchronization in spread spectrum systems.
9. What is near far effect in CDMA
10. Write a short note on smart Antennas.

**(10 × 4 = 40 Marks)**

P.T.O.



## PART – B

Answer any **two** full questions from each module, each question carries **10** marks.

### Module – 1

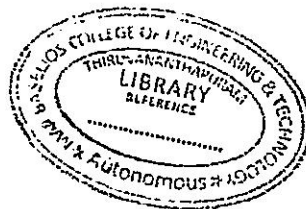
11. Write a short note on Satellite Launchers. With a diagram explain the launching procedure of placing a satellite into a geostationary orbit
12. Explain about the satellite orbital parameters in detail
13. Derive an expression for the resulting downlink signal, after the uplink, crosslink and downlink transmissions have taken place.

### Module – 2

14. What is the need for frequency reuse? Explain the frequency reuse concept and prove that  $N = I^2 + IJ + J^2$  where N is the number of cells per cluster
15. Explain the impulse response model of a multipath channel.
16. Explain the details and briefly compare SDMA/FDMA/TDMA/CDMA mechanisms.

### Module – 3

17. Explain the fundamental concepts of direct sequence spread spectrum modulation system.
18. Describe the principle of Multiuser Detection with examples.
19. Write note on
  - (a) Ergodic Capacity
  - (b) MIMO Antenna Systems



(6 × 10 = 60 Marks)

