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A – 2363

Reg. No. : .....

Name : .....

**Eighth Semester B.Tech. Degree Examination, April 2016  
(2008 Scheme)  
08.804 : SATELLITE AND MOBILE COMMUNICATION (T)**

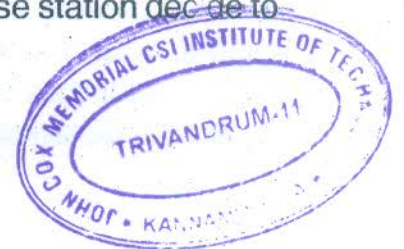
Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer all questions :

1. State Kepler's laws as applied to satellite communications. Briefly describe the orbital parameters with a neat diagram.
2. Briefly discuss the sequence of events during the launch of a geostationary satellite.
3. Consider a satellite transmitting 25W at a frequency of 4.2 GHz Via an antenna of 20 dB gain. An earth station in the network uses an antenna of 12m diameter with an efficiency of 60%. Determine the gain of the earth station antenna.
4. Discuss the effect of rain in radio wave propagation . Estimate the attenuation due to rain. What are the assumptions taken ?
5. Briefly explain the fading effect due to multipath time delay spread and Doppler shift.
6. Illustrate with a neat schematic the steps involved when a base station decide to hand off a mobile user.
7. With a neat schematic explain the frame structure of GSM.
8. Explain major benefits of frequency reuse.
9. Compare salient features of CDMA and SDMA.
10. Briefly explain the concept of smart antennas.



**(10x4=40 Marks)**

P.T.O.



## PART – B

Answer **any two** questions from **each** Module :

**Module – I**

11. Derive the combined link equation of a satellite communication system.
12. Discuss the role of propagation effects on the design of a satellite communication link.
13. Determine the azimuth and elevation angles of a ground terminal located at a point situated at coordinates  $51^{\circ}\text{N}$ ,  $0.5^{\circ}\text{E}$  for communicating with geostationary satellite positioned at  $335.5^{\circ}$  East.

**Module – II**

14. Write notes on :
  - a) TDMA overlaid on FDMA.
  - b) Outdoor propagation models.
15. With a neat schematic explain the architecture of GSM. Explain the functions and responsibilities of each section.
16. Explain impulse response model of a multipath channel. What are the important parameters of multipath channel.

**Module – III**

17. With a neat block diagram explain the principle of direct sequence spread spectrum modulation.
18. What are the advantages of CDMA ? Briefly explain how combination of FDM and TDM can be used to share the radio spectrum.
19. Consider a spread spectrum system with processing gain of 1000 and an implementation loss of 2dB. The required carrier-to-noise ratio at the demodulator input is 7dB. Determine the interference which can be tolerated by the system.

**(6×10=60 Marks)**

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