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Question Paper Code : 41296

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Eighth Semester

Electronics and communication Engineering

080290073 — CELLULAR AND MOBILE COMMUNICATION

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the techniques used to increase the coverage in cellular system?
2. Define grade of service and frequency reuse concept.
3. Mention the parameters of mobile multipath channels.
4. Determine the co-channel reuse ratio for the cluster with 20 cells.
5. Find the (a) the peak frequency deviation (b) minimum band width of an FSK signal with a mark frequency of 49KHZ, a space frequency of 51KHZ and an input bit rate of 2Kbps.
6. List any two mobile station antennas and state their significance.
7. Determine the minimum number of bits required in a PCM code for a dynamic range of 80dB. What is coding efficiency?
8. Mention the band width of USDC voice channel. What type of modulation is used with USDC voice and control channels?
9. How many control channels are specified for AMPS systems? compare AMPS and GSM system.
10. What is meant by forward CDMA channel and reverse CDMA channel?

PART B — (5 × 16 = 80 marks)

11. (a) What are the types of multiple access techniques? Explain spread spectrum multiple access techniques and mention its merits and demerits.

Or

- (b) (i) Explain the various techniques used to improve the coverage and capacity in cellular systems. (10)
- (ii) Consider an FDMA system for multimedia data users. The modulation format requires 10 MHz of spectrum for each user and guard bands of 1 MHz are required on each side of the allocated spectrum in order to minimize out of band interference. What total bandwidth is required to support 100 simultaneous users in this system? (6)

12. (a) With free space propagation model, explain propagation mechanism and derive an expression for received power at the mobile using the two ray ground reflection model.

Or

- (b) Explain the following
- (i) Link budget design using path loss models (8)
- (ii) Parameters of mobile multipath channels. (8)

13. (a) With neat diagram explain, how OFDM solve the multipath problem and discuss its merits and application.

Or

- (b) (i) What is meant by diversity reception? Explain the various types of diversity. (8)
- (ii) With neat diagram explain implementation issues in RAKE receiver. (8)

14. (a) What are the characteristics of speech signals? Explain the concept of adaptive differential pulse code modulation and mention its application.

Or

- (b) Explain the following
- (i) Speech coders for mobile communication (8)
- (ii) Linear predictive coders. (8)

15. (a) Explain the architecture channel and frame structure in GSM standard.

Or

- (b) Explain the principles of the following
- (i) GPRS and EDGE standards. (8)
- (ii) W-CDMA layer architecture. (8)