Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 11293

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2014.

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 is the basis of SDMA protocol?
2. Determine the frequency reuse factor for a cell radius of 4 km seperated from nearest co-channel cell by a cluster of 3.2 km.
3. State the major factors causing propagation loss in wireless environment.
4. Determine the coherence bandwidth for a delay spread of 2 μS.
5. What is the principle behind RAKE receiver?
6. Differentiate between a high gain omni directional antenna and a directional antenna having the same gain.
7. Characterise the speech signal.
8. State the function behind vocoder. Classify the types of vocoder used in cellular system.
9. Mention the features of the next generation 4 G wireless networks.
10. What is the function of GGSN and SGSN in GPRS network.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Suggest the ways to increase the radio coverage and capacity in cellular systems. (12)

(ii) For a cellular system a cluster size of 12 and the signal to interference ratio S/I is 15 db. The mobile is at a distance of 15km between the reused cell. Determine the radius of the cell. (4)

Or

(b) (i) Compare the performance of different multiple access techniques used in wireless environment. (10)

(ii) Explain generic handoff scenario in cellular systems. (6)

12. (a) (i) Write a note on the classification of small scale fading. (12)

(ii) Determine the maximum speed of a vehicle in a mobile communication system experience a maximum Doppler shift of 60 HZ and a frequency of transmission 900 MHZ. (4)

Or

(b) (i) Illustrate the impulse response model of a multipath channel. (10)

(ii) Explain any one type of indoor propagation path loss model. (6)

13. (a) (i) What are the issues in wireless environment? (6)

(ii) Explain the choice of using digital modulation techniques in mobile communication system. (10)

Or

(b) (i) Describe various criteria that decide placement of base station and mobile station antennas. (10)

(ii) Write a note on the basic principle and the transceiver implementation of OFDM system. (6)

14. (a) Discuss the choice of speech coders for mobile communication. (16)

Or

(b) Explain the following :

(i) Adaptive quantisation (8+8)

(ii) Linear predictive coder.

15. (a) (i) Briefly explain the key features in the evolutional process of 1G to 2G. (10)

(ii) How to achieve power control in CDMA based IS-95 standard. (6)

Or

(b) Explain the architecture and mobility support to GPRS network. (16)
