MCSE/MCIT/MCTA–204(F)

M. E./M. Tech. (Second Semester)
EXAMINATION, June, 2010
MOBILE COMPUTING

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 40

Note : Attempt any *five* questions. All questions carry equal marks. Make suitable assumptions wherever necessary.

1. (a) Draw and explain the basic analog cellular system.

   (b) Derive the expression :

   $$C = 10 \log \alpha - 10 \gamma \log R$$

   where,

   C = Received carrier power

   α = Constant

   R = Distance measured from the transmitter to the receiver

   γ = Propagation path loss

   (c) If there are 50 channels in a cell to handle all the calls and the average is 100 s per call, how many calls can be handled in this cell with a blocking probability of 2 percent ? Because N = 50 and B = 2, the offered load is A = 40·3.

(a) Explain the frequency reuse distance in cellular system.

(b) During a busy hour, the number of calls per hour Q_i for each of 10 cells is 2000, 1500, 3000, 500, 1000, 1200, 1800, 2500, 2800, 900. Assume that 60 percent of the phones will be used during this period ($\eta_c = 0.6$) and that one call is made per car phone. Estimate the total number of customers in the system.

(c) What do you understand by co-channel channel interference reduction factor ? Derive the necessary expression for it.

(a) In a mobile radio environment, the average cell site antenna height is about 50 meters, the mobile antenna height is about 3 meters and the communication path length is 5 km. Determine :

  (i) The incidental angle

  (ii) The elevation angle at the antenna of the mobile unit

  (iii) The elevation angle at the location of the mobile unit

(b) Estimate the phase difference between a Direct path a Ground-Reflected path.

(a) Differentiate between the co-channel interference and adjacent channel interference with the necessary diagram.

(b) Describe the different types of Smart Antenna. Explain the advantage, elements, and applications of smart antenna.

5. (a) What is Handoff ? What is the purpose of Handoff What are the different types of Handoffs ? Explain t Mobile Control Handoff (MCHO) algorithm.

  (b) Describe the mobile point-to-point model (L model).

6. (a) What are the various techniques possible to impro coverage in cellular system ?

  (b) What do you understand by cell splitting ? What is tl transmitted power after splitting ? Explain tl different cell splitting techniques. Give different fact that limits splitting size.

7. (a) Describe the functional architecture and princip interface of GSM.

  (b) How is guard spaces realized between users in CDMA

  (c) Explain the Channel coding and interleaving in GSM

8. Write short notes on any *three* of the following :

  (a) Dropped call rate

  (b) Foliage loss

  (c) Multipath propagation

  (d) Mobile ATM