Code: CT78   **Subject: MOBILE COMPUTING**

ALCCS – NEW SCHEME

Time: 3 Hours   **FEBRUARY 2013**   **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE
IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE:
- **Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.**
- **Parts of a question should be answered at the same place.**

Q.1 a. Give the significance of cell splitting to improve the capacity of cellular systems.

  b. Explain the tunneling operation in mobile IP. Give the relevant diagram.

  c. Define and explain handoff in a cellular telephone network. Give formula for the number of channels supported by FDMA.

  d. Explain Infrastructure Level Security and System Level Security models in mobile computing environment.

  e. Explain the role of session mobility and service mobility in wireless protocols.

  f. Compare location dependent and location independent computing models.

  g. Write any two advantages and disadvantages of WLAN.   **(7×4)**

Q.2 a. Explain the significance of sectoring in reducing the co-channel interference.   **(6)**

  b. If a total of 30 MHz of bandwidth is allocated to a particular FDD cellular telephone system which uses two 20 KHz simplex channels to provide full duplex voice and control channels, compute the number of channels available per cell if a system uses:
  (i) four-cell reuse
  (ii) seven-cell reuse
  (iii) 12-cell reuse.   **(6)**

  c. Compare the advantages and disadvantages of CDMA with TDMA/FDMA.   **(6)**

Q.3 a. Discuss the functioning of the following protocols in Bluetooth technology: **(6)**
  (i) Cable Replacement Protocol
  (ii) Telephony Control Protocol
  (iii) Adopted Protocols

  b. Explain the basic features of Cellular IP. Mention its advantages and disadvantages.

                                                                                   (6)

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    c. Describe the significance and categorization of tags in RFID systems. **(6)**

Q.4 a. Write short notes on Location management requirements in cellular systems. **(6)**

    b. Explain the functioning of Network and Switching Subsystem (NSS) and its registers in a GSM cellular system. **(6)**

    c. Compare borrowing channel allocation (BCA), fixed channel allocation (FCA), and dynamic channel allocation (DCA) schemes. Mention their usage in real time applications. **(6)**

Q.5 a. Explain the following parameters that define priorities in Medium Access Control:
    (i)   Short inter-frame spacing (SIFS)
    (ii) PCF inter-frame spacing (PIFS)
    (iii) DCF inter-frame spacing (DIFS) in Medium access and
    Draw the figure for medium access and inter-frame spacing. **(6)**

    b. Describe the impact of reflection, diffraction and scattering mechanisms on the propagation of radio waves in mobile communication system. **(6)**

    c. Define the *far-field* region in free space model. Find the far-field distance for an antenna with maximum dimension of 1m and operating frequency of 600 MHz. **(6)**

Q.6 a. Compare wearable computing and pervasive computing models. **(6)**

    b. Explain data dissemination models used in information management. **(6)**

    c. Explain the characteristics and configuration parameters of Wireless TCP. **(6)**

Q.7 a. Explain the significance of power management in wireless systems. **(6)**

    b. Write short notes from any **FOUR** of the following. **(4×3=12)**

    (i)   Mobile Transactions
    (ii) Wireless Web
    (iii) Reduced user Interfaces
    (iv) Mobile Agents
    (v) Congestion control in Wireless TCP