Code: CT78   **Subject: MOBILE COMPUTING**

ALCCS – NEW SCHEME

Time: 3 Hours | **AUGUST 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. Is directional antenna useful for mobile phones? Why?

   b. What is reuse factor? Explain whether a low or a high reuse factor is better?

   c. Explain briefly the functionalities of Link Manager Protocol (LMP) and service discovery protocol (SDP).

   d. Explain multi-path interference and a solution to it in brief.

   e. How does the near/far effect influence TDMA systems? What happens in CDMA systems?

   f. Differentiate between active and passive scanning.

   g. Mobile agents have several advantages in the development of various services in smart environments in addition to distributed applications. List any four.   **(7×4)**

Q.2 a. There are two different kinds of mobility: user mobility and device portability. Differentiate giving example of each category.   **(4)**

   b. Explain the functions of following layers with respect to wireless and mobile environment:
   Physical layer, Data link layer, Network layer, Transport layer and Application layer
          (10)

   c. What multiplexing schemes are used in GSM and for what purposes? Briefly describe.   **(4)**

Q.3 a. List the entities of mobile IP and describe data transfer from mobile node to a fixed node and vice versa. Why and where encapsulation is needed?   **(10)**

   b. What do you mean by WiMAX? In what way it is similar to DSL?   **(4)**

c. What advantages does the use of IPv6 offer for mobility?   **(4)**

Q.4 a. What is mobility management? Describe two important aspects of mobility management.   **(9)**

b. What are the main advantages of cellular systems with small cells? How SDM is typically realized and combined with FDM? How does DCA influence the frequencies available in other cells?   **(9)**

Q.5 a. What do you mean by hidden and exposed terminals? What happens in the case of such terminals if Aloha, slotted Aloha, reservation Aloha, or MACA is used?   **(6)**

b. What are the benefits of spread spectrum? Describe frequency-hopping spread spectrum.   **(6)**

c. What do you mean by Basic Service Set (BSS)? The 802.11 standard supports the formation of two distinct types of BSSs: ad hoc network and Infrastructure BSS. Explain briefly.   **(6)**

Q.6 a. Explain any five configuration parameters that are required to adapt TCP to wireless environments.   **(10)**

b. Explain how selective retransmission is a useful extension of TCP. Are there any disadvantages of this approach?   **(8)**

Q.7 a. What do you mean by pervasive computing? Describe implications in terms of technological requirements of two fundamental characteristics of pervasive applications: mobility and context-awareness.   **(8)**

b. Describe briefly any **TWO** of the following: **(5+5)**

(i)   Mechanisms used to reduce energy consumption and to extend network lifetime
(ii) Wireless Security Threats
(iii) Multi-media object transfer (MOT) protocol