ROLL NO. _____

Code: CT78 **Subject: MOBILE COMPUTING**

ALCCS – NEW SCHEME

Time: 3 Hours **AUGUST 2012** **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. What is the relationship between a base station and a mobile switching center?

b. What is the maximum number of callers in each cell in a GSM?

c. Explain briefly the functions of Host Controller Interface (HCI) and Service Discovery Protocol (SDP).

d. What is Hidden Terminal and Exposed Terminal problem? Explain.

e. Mention atleast four limitations/challenges that wireless LAN technology needs to overcome.

f. Differentiate between adjacent channel and co-channel interference.

g. What is objective of WEP? How it is achieved? **(7×4)**

Q.2 a. Explain the term interference and countermeasures in SDMA, TDMA, FDMA and CDMA systems. **(8)**

b. Discuss various identifiers/addresses-IMEI, IMSI, MSISDN, MSRN, LAI, TMSI, LMSI, CI and BSIC- provided in GSM. Distinguish between user related and system related identifiers. **(10)**

Q.3 a. Describe Bluetooth architecture and protocol. Also discuss its limitations. **(10)**

b. What are the several requirements that accompanied the development of the mobile IP as a standard to enable mobility in the internet? **(8)**

Q.4 a. How is handoffs in cellular mobile communication affected by handoff threshold and minimum acceptable signal level? Illustrate Hard Handoff and Soft Handoff in cellular mobile communication systems. **(6)**

b. What do you mean by the following terms: AUC, HLR, VLR, and EIR? Explain briefly. **(8)**

c. Looking at the HLR/VLR database approach used in GSM—how does this architecture limit the scalability in terms of users, especially moving users? **(4)**

Q.5 a. What are the different types of Inter Frame Space (IFS) used by IEEE 802.11 protocol? Explain their purpose. **(4)**

b. Explain in brief the Frequency Hopping Spread Spectrum (FHSS) technique. **(4)**

c. Most wired LANs products use Carrier Sense Multiple Access with Collision Detection (CSMA/CD) as the MAC protocol. However wireless topologies can create a problem for CSMA/CD. What challenges must be dealt with by the MAC used for IEEE 802.11? Discuss main steps of the solution to these problems. **(10)**

Q.6 a. Give an overview of mechanism, advantages and disadvantages of following classical enhancements to TCP for mobility: **(12)**

(i) Indirect TCP
(ii) Snooping TCP
(iii) M-TCP
(iv) Fast retransmit /fast recovery

b. Discuss two basic transport mechanisms used by Digital Audio Broadcasting (DAB). **(6)**

Q.7 a. What are the functions of authentication and encryption in GSM? How is system security maintained? **(4)**

b. Discuss three different forms of human-computer interaction: active, passive and coercive with respect to pervasive computing. **(6)**

c. Discuss working of Mobile agent. For what types of applications mobile agents are suitable? **(8)**