CE1.5-R4: MOBILE COMPUTING

NOTE:

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1.

a) Briefly define the following terms with respect to Mobile IP entities.
   i) Home network
   ii) Home address
   iii) Foreign agent
   iv) Home agent

b) Define following mobility terms:
   i) Terminal mobility
   ii) Service mobility

c) What is a MSC? What are the functions of MSC in network and switching subsystem?

d) What are the parameters considered for defining QoS in General Packet Radio Service (GPRS) technology?

e) List unique features of Mobile OS which enables different application tasks in mobile taking into account the constraints of hardware and network.

f) List any four basic features and capabilities of Wireless Markup Language (WML).

g) Differentiate “piconet” and “scatternet” in Bluetooth technology.

(7x4)

2.

a) Draw the standard IEEE802.11 architecture including main control functions. Explain the use of MAC algorithm in IEEE 802.11 protocol stack. Also, discuss two main services supported by MAC layer like Distributed Coordination Function and Point Coordination Function.

b) The primary standard for 3G system is referred to as the International Mobile Telecommunications beyond the year 2000 namely IMT-2000. What are the main goals and parameters support by this new standard? Summarizes the main differences in compare to standard CDMA system.

(9+9)

3.

a) Why does WCDMA use Walsh codes in forward and reverse channels for separating users, while cdmaOne uses them only in the forward channel? Explain both channel significances for implementing forward – reverse links in 3G system.

b) If a total of 33 MHz of bandwidth is allocated to a particular cellular system which uses two 25 KHz Simplex channels to provide full Duplex voice. Compute the number of channels available per cell if the system uses,
   i) 4-cell reuse and
   ii) 7-cell reuse

(9+9)

4.

a) Discuss the development of indirect TCP (I-TCP) in a mobile host connection types. Also, what are the actions required to be taken via I-TCP during handover in mobile IP? List at least two advantages of I-TCP over Standard TCP.

b) Describe operation of TCP Reno and TCP Vegas, including congestion avoidance (congestion control), slow start, and fast retransmission and recovery mechanisms.

(8+10)

5.

a) What are the major roles of Mobile IP in internet technology? How it will maintain the connectivity while moving from one network to another? Explain in terms of different issues like security and authentication.

b) With focus on security in mobile computing, what are the problems associated in wireless network. Also explain a level of security provided in wireless network with techniques and algorithms.

c) List the disadvantages and issues associated with the packet switching in wireless mobile computing.

(9+6+3)

6.

a) Explain the encryption using Symmetric-key function in a wireless mobile computing so that no user can access the mobile communication system using a false identity. Give any two encryption protocols which uses the Symmetric-key function.

b) What are the strict rules we need to follow to create XHTML MP Templates that work on every mobile platform?

c) What are the methods available in a wireless network to solve a Hidden node problem?

(6+6+6)

7. Write **short notes** on following:

a) Mobile operating system: Symbian, its pros and issues

b) Snoop TCP: Operation, Advantages and Disadvantages

c) WAP programming model: Optimizations and extensions

(6+6+6)