TCS-054

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0156   Roll No.

B. Tech.

(SEM. VIII) EXAMINATION, 2007-08
MOBILE COMPUTING

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

Note : (1) Attempt **all** questions.

(2) All questions carry **equal** marks.

(3) Be precise in your answer.

(4) No second answer book will be provided.

1 Attempt any **four** parts :   5x4

(a) Why did we choose hexagonal shape for cells in cellular phone system? What is frequency reuse?

(b) How do the signaling sequences address the following features in GSM?

(i) Location Updating

(ii) Mobile call origination

(iii) Authentication and ciphering

(c) Distinguish between High Speed Circuit Switched Data (HSCSD) and General Packet Radio Service (GPRS) of GSM standard. What architectural additions need to be made in existing GSM to have support of GPRS?

(d) Discuss different channel allocation techniques used in cellular system.

(e) Suppose that A,B,C are simultaneously transmitting 0 bits, using CDMA system with following sequences:

A = (-1-1-1+1+1-1+1+1)
B = (-1+1+1-1+1+1+1-1)
C = (-1+1-1+1+1+1-1-1)

What is the resulting chip sequence?

(f) What are different handoff detection strategies? Discuss different types of Handoff with reference to network.

2 Attempt any four parts: 5x4

(a) What are hidden node and exposed node problems in wireless LAN? How is it addressed in MACA?

(b) Distinguish between DCF and PCF in context to wireless LAN. How their coexistence is made possible in wireless Lan?

(c) Give an overview of the WAP architecture and compare it with the typical internet architecture when using www.

(d) Sketch a neat diagram showing the Bluetooth protocol stack. State the functions of the following layers:

   (i) Radio Layer

   (ii) Baseband Layer

   (iii) L2CAP layer

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

(f) What are the implications of traditional TCP on mobility? Discuss any one strategy that attempts to increase TCP's performance in wireless and mobile environment.

Attempt any two parts: 10x2

(a) Discuss the impact of mobile computing on following aspects of data management.
   (i) Transactions
   (ii) Data Disseminaion
   (iii) Query Processing

(b) How does mobility affect data replication when we consider replicating on mobile platform? Discuss different possible replicating schemes when both client and server move only within their home location servers.

(c) What is multicluster architecture? Discuss any one strategy/algorithm required to partition the network into several clusters.

4 Attempt any two parts: 10x2

(a) What is mobile agent? What are the benefits/good reasons for using mobile agents? Discuss the classification of fault tolerance schemes for mobile agents.

(b) Discuss different security threats stemming from

   (i) An agent attacking an agent platform

   (ii) An agent platform attacking an agent

(c) Discuss various issues related to transaction processing in mobile computing environment.

5   Attempt any two parts :   10x

   (a) Discuss fundamental differences between wired networks and ad hoc wireless networks related to routing. Identify some of the key issues involved in QoS routing in ad hoc networks.

   (b) Discuss the ad hoc on demand distance vectors routing. How is it different than standard distance vector algorithm?

   (c) Distinguish between proactive, reactive and hybrid protocols. For the topology shown in following figure, create a Directed Acyclic Graph (DAG) for node 1 as the source and node 7 as the destination in TORA. If the link between nodes 4 and 6 breaks as shown in the figure, find the change in DAG (Also mark the distance from the destination).