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

PAPER ID : 2155 Roll No. | | | | | | | | | | |

MCA

(SEMESTER-V) THEORY EXAMINATION, 2012-13

MOBILE COMPUTING

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

Note : Attempt questions from each Section as indicated.

SECTION – A

1. Attempt **all** parts. **2 × 10 = 20**

(a) What are the most important challenges facing mobile computing today ?

(b) Differentiate between soft handoff and hard handoff.

(c) Mention various control channels in logical channels of GSM network.

(d) How and why does I-TCP isolate problems on the wireless link ?

(e) What are the powers saving mechanisms in Bluetooth ?

(f) Define agent solicitation mechanism. What happen if a node does not receive reply for its solicitation ?

(g) Define cache invalidation mechanism. What are four possible invalidation mechanisms in mobile environment ?

(h) Explain MSISDN number used in localization of mobile station in GSM network.

(i) Define proactive routing protocol used in mobile adhoc network ? What its advantages and disadvantages. Mention two proactive routing protocols.

(j) What is a care of address ?

SECTION – B

2. Attempt any **three** parts : **10 × 3 = 30**

(a) (i) Consider a sender A wants to send the data bit 0 with key = 010011. Consider a sender B wants to send the data bit 1 with key = 110101. Assume we code a binary 0 as –1, a binary 1 as + 1. Both signals are transmitted at the same time. The noise to the transmitted signal is (–1, 0, +1, 0, –1, +1). What signal is received by a receiver ? What can the receiver detect for sender A and B respectively ?

(ii) How is localization, location update, roaming etc done is GSM and reflected in databases ? What are typical roaming scenarios ?

(b) (i) Explain the hidden terminal problem and exposed terminal problem.

(ii) What are the advantages and problem of forwarding mechanism in Bluetooth networks regarding security, power saving and network stability ?

(c) (i) What are the primary goal of the WAP forum efforts. Draw and describe how the primary goals are reflected in the initial WAP protocol architecture.

(ii) Explain the mechanism used by CODA for high availability. Discuss, using a neat diagram, the different states of the CODA cache manager Venus.

(d) (i) Describe various requirements for the design and deployment of mobile agent systems.

(ii) Differentiate between cellular and ad hoc wireless networks.

(e) (i) Compare and contrast the AODV and DSR protocol.

(ii) List the entities of mobile IP and describe data transfer from a mobile node to a fixed node and vise versa.

SECTION – C

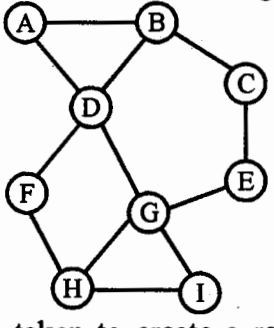
Attempt any **five** questions : **10 × 5 = 50**

3. Name and describe the main elements of the GSM system architecture and describe their functions. What are the advantages of specifying not only the radio interface but also all internal interfaces of the GSM system ?

4. Compare in detail various multiple access techniques like SDMA, FDMA and TMA and CDMA in mobile communication systems.

5. Suppose propagation delay is α, SIFS is α, DIFS is 3α, and RTS and CTS are 5α, respectively, for CSMA/CA with RTS/CTS.
   (a) Draw the diagram specifying the timing for the above scenario.
   (b) What is the earliest time for the receiver to send the CTS message ?
   (c) If the data packet is 100α long, what is the shortest time for the receiver to send the ACK signal ?
   (d) Can you make SIFS = 0 ?

6. A snapshot of an ad hoc network is shown in the figure.



Describe step by step process taken to create a route from the source node A to the destination node I using the Dynamic Source Routing algorithm.

7. Describe in detail the various classical enchantments made to the TCP in order to facilitate mobility. Describe the advantages and disadvantages of these mechanisms.

8. Explain the Push based and Pull based data delivery mechanism for wireless data applications. Mention their advantage and disadvantages.

9. Explain in detail the wireless traction protocol of the WAP architecture.
