MOBILE COMPUTING
(CSBS 3231)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) The IEEE 802.11 standard is one of the most popular standards for _____
(a) wireless LANs (b) wired LANs
(c) wired PANs (d) wireless PANs.

(ii) The hidden and exposed terminal problems significantly reduce the throughput of a network when the traffic load is _____
(a) less (b) high
(c) medium (d) average.

(iii) _____ is a solution that uses an address redirection mechanism for this address mobility issue in wireless Internet.
(a) Mobile IP (b) Fixed IP
(c) MAC IP (d) MACA IP

(iv) HLR stands for _____
(a) Human location register (b) High location register
(c) Home location register (d) Heavy location register.

(v) In the I TCP the Foreign Agent (FA) becomes or acts as a _____ and relays data in both directions.
(a) Proxy (b) Router
(c) Node (d) Access point

(vi) Which of the following buffers data close to the mobile host to perform fast local retransmission in case of packet loss?
(a) Indirect TCP (b) Snooping TCP
(c) Foreign agent (d) None of the following.

(vii) Indirect TCP segments a TCP connection into a fixed part and a _____
(a) wireless part (b) wired part
(c) either wireless part or wired part (d) none of the above.

(viii) Which of the following is considered as the heart of the Global Systems for Mobiles (or GSM)?
(a) Networks Switching Sub System (b) Operational Support Sub-system
(c) Base Station Subsystem (d) None of the above.

(ix) The hexagon shape is used for radio coverage because
(a) it uses the maximum area for coverage
(b) fewer number of cells are required
(c) it approximates a circular radiation pattern
(d) all of the above.

(x) In a Cellular network, which of the following is used to use the same frequency for others?
(a) Frequency hopping (b) Frequency reuse
(c) Frequency planning (d) None of the above.

Group- B

2. (a) Write the characteristics of mobile computing. *[(CO1)(Remember/LOCQ)]*
(b) Compare among different multiple access technologies. *[(CO1)(Analyze/IOCQ)]*
(c) Describe different interfaces (at least three) used in GSM system. *[(CO3)(Understand/LOCQ)]*

3 + 6 + 3 =12

3. (a) Differentiate between Fixed Channel Allocation and Dynamic Channel Allocation method. *[(CO1)(Analyze/IOCQ)]*
(b) Write the evolution of different generations of mobile technology. *[(CO2)(Understand/LOCQ)]*
(c) What are the functions of HLR and VLR? *[(CO3)(Understand/LOCQ)]*

6 + 4 + 2 = 12

Group - C

4. (a) Explain with the help of a diagram, the GPRS network architecture. *[(CO3)(Understand/LOCQ)]*
(b) How call can be routed to a mobile subscriber from BTS in GSM network? *[(CO3)(Analyze/IOCQ)]*

6 + 6 = 12

5. (a) Explain with diagram hidden and exposed terminal problems. How MACA solves hidden and exposed terminal? *[(CO3)(Analyze/IOCQ)]*
(b) Outline briefly the function of SGSN in GPRS network. *[(CO3)(Understand/LOCQ)]*
(c) What are the advantages of GPRS over GSM? *[(CO3)(Understand/LOCQ)]*

(4 + 2) + 3 + 3 = 12

Group - D

6. (a) Explain the architecture of Bluetooth Protocol Stack with a suitable diagram. *[(CO4)(Understand/LOCQ)]*
   (b) How are hand-offs handled in snooping TCP? *[(CO5)(Analyse/IOCQ)]*
   (c) What is Scatternet? *[(CO4)(Understand/LOCQ)]*

6 + 4 + 2 = 12

7. Write short note on (any three):
   (i) Agent Registration in Mobile IP.
   (ii) Indirect TCP
   (iii) Snooping TCP
   (iv) Tunnelling in Mobile IP. *[(CO5)(Understand/LOCQ)]*

(4 + 4 + 4) = 12

Group - E

8. (a) What is MANET? Write the features of MANET. *[(CO6)(Understand/LOCQ)]*
   (b) What are the uses of FANET? *[(CO6)(Understand/LOCQ)]*
   (c) Differentiate between proactive and reactive routing protocol. *[(CO6)(Analyze/IOCQ)]*

(1 + 4) + 3 + 4 = 12

9. (a) List the advantages and disadvantages of DSDV routing protocol. *[(CO6)(Understand/LOCQ)]*
   (b) Illustrate DSR routing protocol in details and compare it with DSDV. *[(CO6)(Understand/LOCQ)]*

4 + (5 + 3) = 12

Cognition Level	*LOCQ*	*IOCQ*	*HOCQ*
Percentage distribution	*66.67*	*33.33*	*0*

Course Outcome (CO):

After the completion of the course students will be able to
1. Understand various multiple access techniques and compare among them.
2. Learn the evolution of different generations of mobile networks.
3. Understand the concept of cellular mobile communication.
4. Explain different inter-networking challenges and solutions in wireless mobile networks.
5. Analyze the modifications necessary in normal TCP and IP protocols to be made suitable for wireless network.
6. Compare among different mobile routing algorithms.

**LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question.*