2013

MOBILE COMPUTING

Time Allotted : 3 Hours | *Full Marks* : 70

The figures in the margin indicate full marks.

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

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

i) GSM uses ..... for multiplexing.

a) CDMA b) TDMA

c) FDMA d) Both (b) and (c).

ii) ..... is a computerized centre responsible for connecting & recording call information and billing.

a) Base station b) Cell

c) MSC d) Mobile station.

iii) A single frame in GSM comprises ..... time slots.

a) 10 b) 7

c) 8 d) 4.

iv) IEEE 802.11b has data transfer rate of

a) 11 mbps b) 13 mbps

c) 10 mbps d) none of these.

v) Frequency reuse can help which of the following systems ?

a) Cellular system

b) Conventional mobile telephony

c) Paging system

d) Cordless telephony.

vi) WAP protocol stack has similarity to

a) OSI model

b) TCP/IP

c) both of these

d) none of these.

vii) WLAN is

a) infrastructure network

b) ad hoc network

c) may be either infrastructure or ad hoc network

d) none of these.

viii) Full form of HSCSD is

a) High Spectrum Circuit Switched Data

b) High Speed Channel Switched Data

c) High Speed Circuit Switched Data

d) High Speed Circuit Switched Device

ix) Ad hoc networks are examples of which type of networks ?

a) Fixed and wired

b) Mobile and wired

c) Fixed and wireless

d) Mobile and wireless.

x) If N is the number of cells per cluster then frequency reuse factor of the cellular system is

a) N b) $1/N$

c) N^2 d) none of these.

GROUP - B
(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

What is hand-off ? What are the different hand-off strategies ? Discuss the merits and demerits of each such strategy. 1 + 2 + 2

What is WAP ? Why is it used ? 2 + 3

4. What are tunnelling and encapsulation in the context of mobile IP ?

5. What is spread spectrum technique ? Name two standard spread spectrum techniques and state the main difference in their principles of operation. 1 + 2 + 2

6. What are hidden station problem and exposed station problem in WLAN ? How are the problems solved ? 2 + 3

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. Define the following terms and state their usage : 5 × 3

a) Near-far effect

b) Orthogonal code and its usage in mobile communication

c) FCC

d) RVC

e) TMSI.

8. What is multiple access technique ? Do a comparative study among FDMA, TDMA and CDMA. 5 + 10

9. a) What is meant by access control ?

b) What are contention-based and contention-free access control mechanisms ?

c) Why does CSMA/CD not work for medium access control of WLAN ?

d) What is the alternative mechanism of CSMA/CD ? Write steps of operation to implement such an alternative mechanism. 2 + 2 + 5 + 5

10. a) Draw the system architecture of GSM and explain the functionality of HLR and VLR.

b) Describe the architecture of a 3G network. What are the various services associated with a 3G network ?

c) Define packet switching and circuit switching. 5 + 5 + 5

Write short notes on any three of the following : 3 × 5

a) Wireless local loop

b) Call setup of GSM network for mobile-to-mobile call

c) Pervasive computing

d) GPRS

e) Iridium satellite system.
