Total No. of Questions : 12]

SEAT No. :

P1807

[Total No. of Pages : 3

[4859]-210
B.E. (Computer Engineering)
b-MOBILE COMPUTING
(2008 Course) (Semester-I) (Elective-II)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6 from Section-I and Q. 7 or Q. 8, Q. 9 or Q. 10, Q. 11 or Q. 12 from Section-II.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of calculator is allowed.***
6) ***Assume suitable data if necessary.***

SECTION-I

Q1) a) Enlist and explain the Teleservices, bearer services and supplementary services provided by GSM. **[10]**

b) State reasons behind the design of GSM system. **[6]**

OR

Q2) a) Explain channel layout and frequency bands of operation in GSM system. What are the different categories of mobile telephone units specified for the European GSM system? **[8]**

b) Discuss in detail, the typical GSM architecture. **[8]**

Q3) a) Explain the structure of a TDMA slot with a frame for following bursts **[8]**

i) Frequency Correction burst.

ii) Synchronization burst.

b) Explain frame, multiframe, superframe and hyperframe with the suitable diagram. **[8]**

OR

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Q4) a) In a speech frame there are 24 frames in one multiframe lasting 120 ms carrying data. The number of data bits per frame is 114. What is the data rate for full and half rate channels? **[8]**

b) Explain different service areas in which the GSM is partitioned into. **[8]**

Q5) a) What do you mean by mobility management? Explain three different states of mobile to be considered in the mobility. **[8]**

b) With the help of a diagram, explain the GSM signaling protocols. **[10]**

OR

Q6) a) Explain in detail connection request procedure in formation of a call. **[8]**

b) What are the steps in the establishment of MS-PSTN call? Explain the call set-up with suitable signal and response diagram. **[10]**

SECTION-II

Q7) a) What are the four basic security services provided by GSM? Explain any two of them. **[8]**

b) Explain generic authentication process in the context of Security management in GSM systems. Why do you think the ciphering key K_c must differ from one call to another? **[8]**

OR

Q8) a) What are the challenges faced in developing secure applications for mobiles? Explain how these challenges are worked with. **[8]**

b) Briefly describe two different types of SIM implementation in GSM. Provide the respective advantages and disadvantages of these two implementations. List important items stored in a SIM. **[8]**

Q9) a) What are the multiplexing issues in frequency and time domains? **[8]**

b) Derive the multiple access efficiency of FDMA system. **[8]**

OR

Q10)a) Explain the functioning of CDMA system. **[8]**

b) Derive the multiple access efficiency of TDMA system. **[8]**

Q11)a) Explain the procedures provided by RR layer during "Connected Phase". **[8]**

b) Explain three main protocols of RR layer. **[10]**

OR

Q12)a) With the help of neat diagram, explain different formats of $LAPD_m$ ptotocol. **[8]**

b) Explain the four procedures in mobility management and the respective MAP protocols. **[10]**

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