

Total No. of Questions : 12]

SEAT No. :

**P854**

**[4659]-232**

[Total No. of Pages : 3

**B.E. (Computer Engineering) (Semester - I)**

**b - MOBILE COMPUTING**

**(2008 Course) (Elective-II)**

*Time : 3Hours]*

*[Max. Marks :100*

*Instructions to the candidates:*

- 1) *Answer three questions from each Sections.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary.*

**SECTION-I**

- Q1) a)** What is FPLMTS? What are the main objectives of FPLMTS. [8]
- b)** What are different operational and technical requirements of GSM. [8]

OR

- Q2) a)** Find the spectral efficiency in bps/Hz of the GSM system assuming channel bandwidth BW to be 200 kHz and the channel data rate of 270.833 kbps. What will be the spectral efficiency if the bandwidth is increased by 50%. [10]
- b)** Discuss the interfaces: [6]
- i) air interface
  - ii) between MSC and BSS
  - iii) between MSCs.

- Q3) a)** Find the frame, multiframe, superframe and hyperframe rates. [8]
- b)** State reasons for choosing two different multiframe timings for speech and signaling channels. [8]

OR

- Q4) a)** Why it is necessary to wait a random amount of time before retransmission over RACH? Can SACCH be linked to both TCH and SDCCH simultaneously. Justify. [6]

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- b) What are the idle and dedicated modes of the mobile operations? [6]
- c) Why it is absolutely necessary to have a longer GP for access burst. [4]
- Q5)** a) Name three distinct states of mobile. What different functions must mobile perform. [6]
- b) Name three distinct paging types. What are the main distinctions between them. [6]
- c) Why is it necessary for the mobile to register in the system? Can one classify registration as special case of location update? [6]

OR

- Q6)** a) Explain the concept of off - air call setup? What are the advantages of this scheme? [6]
- b) What are different cases of handovers? Draw the signal and response diagram for any two cases and show their differences? [8]
- c) Discuss various types of PSTN networks. [4]

SECTION-II

- Q7)** a) Explain the need for ciphering key  $K_c$  must differ from one call to another? What are the various keys involved in secure communication via encryption? Discuss the steps in encryption. [8]
- b) Discuss the characteristics of SIM. Why PIN is important in ensuring the security. [8]

OR

- Q8)** a) Describe the process of Authentication in detail. [8]
- b) What is TMSI? What is significance of TMSI in call handover? Discuss the process of TMSI assignment as a result of location update. [8]
- Q9)** a) What is the significance of interleaving for GSM. Calculate the interleaving depth assuming the frame duration to be 4.6 ms. Can the interleaving depth be increased arbitrarily? [8]
- b) What is the significance of constraint length  $K$  for convolutional coding? Will the system performance improve as  $K$  increases? [8]

OR

- Q10)a)** Find the speech data rate with 8000 samples /sec speech 13 bit uniform coding. [6]
- b) Why is speech processing delay a function of power consumption at mobile terminal? Why are MOS and MOPS important for speech encoding? What do they signify? [10]

- Q11)a)** What is the basic difference in LAPD<sub>m</sub> and LAPD? What are the two different modes of LAPD<sub>m</sub>? Explain. [6]
- b) Enumerate the functions of MM, CC and RR layers. Illustrate with suitable examples. [8]
- c) What is the difference between Connectionless and connection oriented signaling? [4]

OR

- Q12)a)** Discuss the MAP protocols in CC, MM and RR layers. [6]
- b) Discuss various MTP protocols. [6]
- c) Discuss SCCP, TCAP protocols in detail. [6]

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