



Name :

Roll No. :

Invigilator's Signature :

CS/M.Tech(ECE-COMM)/SEM-2/MCE-203/2012

2012

MOBILE COMMUNICATION

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 any *ten* of the following :

10 × 1 = 10

i) Synchronization channel (SCH) is a

- a) Common Control Channel (CCCH)
- b) Broadcast Channel (BCH)
- c) Dedicated Control Channel (DCCH)
- d) None of these.

ii) Cluster size can be expressed as

- a) $N = i^2 + ij + j^2$
- b) $N^2 = i^2 + ij + j^2$
- c) $N = i^2 + 2ij + j^2$
- d) none of these.



- iii) The modulation technique used in GSM is
- a) MSK
 - b) PSK
 - c) QPSK
 - d) DQPSK.
- iv) In a paging system, a "page" refers to
- a) subscribers' nos.
 - b) issued message
 - c) the network
 - d) modulation scheme.
- v) Co-channel interference in GSM systems can be reduced by
- a) Microcells
 - b) Dynamic channel allocation
 - c) sectoring
 - d) guard band.
- vi) Most common form of modulation used in cellular communication is
- a) AM
 - b) FM
 - c) WBFM
 - d) NBFM.
- vii) UMTS stands for
- a) Universal Mobile Telecommunication System
 - b) Universal Mobile Telecommunication Standard
 - c) Universal Mobile Telephone System
 - d) Unified Mobile Transfer System.
- viii) Soft handoff is used by
- a) GSM
 - b) AMPS
 - c) USDC
 - d) CDMA.



GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following.

$3 \times 15 = 45$

7. a) What are GSM services ?
b) Name the main elements of GSM system architecture & describe their function. $5 + 10$
8. a) What do you mean by Handoff ?
b) What are the different types of Handoff ? $5 + 10$
9. a) If a signal-to-interference ratio of 15 dB is required for satisfactory forward channel performance of a cellular system, what is the frequency reuse factor and cluster size that should be used for maximum capacity if the path loss exponent is (a) $n = 4$ (b) $n = 3$? Assume that there are six co-channel cells in the first tier, and all of them are at the same distance from the mobile. Use suitable approximations.
b) What is Micro cell ? Explain it.
c) Difference between 2G & 3G systems. $7 + 5 + 3$
10. a) Give Comparisons between GSM and CDMA communications.
b) What is GPRS ?
c) What are the different modes of propagation ? Describe them. $5 + 3 + 7$
11. a) What are WI-FI and Bluetooth ?
b) Describe IEEE 802.11 architecture with suitable diagram. $5 + 10$
12. a) Why do cells used have hexagonal shape ?
b) How is fading estimated ? Give parameters to do the same.
c) Discuss the types of GSM logical channels.
d) Prove that for a hexagonal geometry, the co-channel reuse ratio is given by $Q = \sqrt{3}N$. Where $N = i^2 + ij + f$.
 $4 + 2 + 7 + 2$

