	Uitech
Name:	(8)
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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)

Choose the correct alternatives for any ten of the following: 1.

 $10 \times 1 = 10$

- Synchronization channel (SCH) is a i)
 - Common Control Channel (CCCH) a)
 - Broadcast Channel (BCH) b)
 - Dedicated Control Channel (DCCH) c)
 - None of these. d)
- Cluster size can be expressed as ii)

 - 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.

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[Turn over

CS/M.Tech(ECE-COMM)/SEM-2/MCE-203/2012 The modulation technique used in GSM is iii) **MSK** PSK a) b) **QPSK** d) DQPSK. c) iv) In a paging system, a "page" refers to a) subscribers' nos. b) issued message the network modulation scheme. c) d) Co-channel interference in GSM systems can be v) reduced by Microcells a) b) Dynamic channel allocation sectoring c) guard band. d) Most common form of modulation used in cellular vi) communication is a) **AM** b) FM c) **WBFM** d) NBFM. **UMTS** stands for vii) Universal Mobile Telecommunication System a) Universal Mobile Telecommunication Standard b) **Universal Mobile Telephone System** c) Unified Mobile Transfer System. d) viii) Soft handoff is used by **AMPS GSM** a) b)

d)

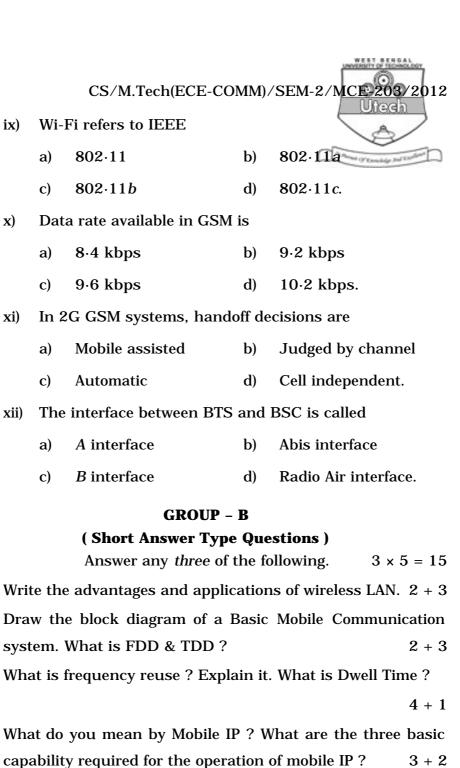
2

CDMA.

USDC

c)

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ix)

x)

xi)

xii)

2.

3.

4.

5.

6.

a)

c)

a)

c)

a)

c)

a)

c)

3

What is the Umbrella Pattern Effect? What is sectorization?

[Turn over

2 + 3

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 = .J3N. Where $N = i^2 + ij + f$.

4 + 2 + 7 + 2