MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : PE-EC701C Mobile Communication and Networks
UPID : 007710

Time Allotted : 3 Hours   *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following :   [1 x 10 = 10]

   (I)   _____ is a CDMA standard of second generation network.

   (II)   _____ diversity is not a category of space diversity technique?

   (III) The interface between MSC and BSC is called (GSM) _____.

   (IV)   _____ is the world's first cellular system to specify digital modulation and network level architecture.

   (V)   What is the disadvantage of guard channel?

   (VI)   The time over which a call can be maintained within a cell without handoff is called _____ .

   (VII) A single MSC or VLR can have many _____ .

   (VIII) The interference between the neighboring base stations is avoided by _____ .

   (IX)   Which is organization providing standards for the GPRS network?

   (X)   A group of cells in a GSM network has a _____ number.

   (XI)   2G CDMA standard – cdma one supports up to _____.

   (XII) _____ feature makes impossible to eavesdrop on GSM radio transmission.

Group-B (Short Answer Type Question)

Answer *any three* of the following :   [5 x 3 = 15]

2. Explain and compare the different hand off initiation techniques used in cellular networks.   [5]

3. Compare between MSK and GMSK modulation schemes.   [5]

4. Define shadowing and log normal shadowing.   [5]

5. What is meant by 'near-far' problem in CDMA based system? Explain.   [5]

6. Explain the concept of RAKE receiver.   [5]

Group-C (Long Answer Type Question)

Answer *any three* of the following :   [15 x 3 = 45]

7. (a) Describe the Channel Assignment Strategies.   [4]

   (b) Explain in detail about multiple accesses with collision avoidance scheme. Explain the advantages of   [5+3]
       the same.

   (c) Compare TDMA & FDMA techniques.   [3]

8. (a) Explain the algorithms for adaptive equalization ?   [5]

   (b) Explain a simplified communications system using an adaptive equalizer at the receiver with neat   [5]
       diagram.

   (c) Discuss MIMO and space time signal processing.   [5]

9. (a) Explain the GSM frame structure.   [5]

   (b) What do you mean by ARFCN?   [3]

   (c) How does GPRS architecture differ from GSM?   [4]

   (d) Which uplink or downlink frequency is allocated the following?   [3]
       a. GSM 900?
       b. DCS 1800?

10. a) Draw the GSM frame structure.   [5+3+3+4
    b) How is security maintained is UTMS services?   ]
    c) What is EDGE system?
    d) Explain the method which is applied to reduce interference in cellular communication system.

11. (a) Differentiate time selective and frequency selective channel.   [5]

(b) Define coherence time and coherence bandwidth. [5]

(c) Explain about two-ray Rayleigh fading model. [5]

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