



**BRAINWARE UNIVERSITY**

**Term End Examination 2019 - 20**

**Programme – Master of Technology in Computer Science & Engineering**

**Course Name – Mobile Computing**

**Course Code – PEC-MCS301A**

(Semester – 3)

Time allotted: 3 Hours

Full Marks: 70

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

**Group –A**

(Multiple Choice Type Question)

20 x 1 = 20

1. *Choose the correct alternative from the following (Answer any Twenty)*
  - (i) The modulation technique used for mobile communication systems during world war II was
    - a. Amplitude modulation
    - b. Frequency modulation
    - c. ASK
    - d. FSK
  - (ii) The early FM push-to-talk telephone systems were used in
    - a. Simplex mode
    - b. Half duplex mode
    - c. Full duplex mode
    - d. None of the above
  - (iii) DECT stands for
    - a. Digital European Cellular Telex
    - b. Digitized Emergency Cellular Telephone
    - c. Digital European Cordless Telephone
    - d. Digital European Cellular Telephone
  - (iv) Paging systems could be used to
    - a. Send numeric messages
    - b. Send alphanumeric messages
    - c. Voice message
    - d. All of the above
  - (v) Carrier frequency of a TV remote control is in the range
    - a. of Infra red
    - b. < 100 MHz
    - c. < 1 GHz
    - d. < 2 GHz
  - (vi) MIN stands for
    - a. Mobile Identification Number
    - b. Mobile Internet
    - c. Mobility In Network
    - d. None of the above

- (vii) PCN is
- a. Wireless concept of making calls
  - b. For receiving calls
  - c. Irrespective of the location of the user
  - d. All of the above
- (viii) IMT-2000 is a digital mobile system that functions as
- a. Pager
  - b. Cordless
  - c. Low earth orbit satellites
  - d. All of the above
- (ix) 3G W-CDMA is also known as
- a. UMTS
  - b. DECT
  - c. DCS-1800
  - d. ETACS
- (x) Commonly used mode for 3G networks is
- a. TDMA
  - b. . FDMA
  - c. TDD
  - d. FDD
- (xi) The shape of the cellular region for maximum radio coverage is
- a. Circular
  - b. Square
  - c. Oval
  - d. Hexagon
- (xii) Disadvantage of using Dynamic channel assignment is
- a. More storage required
  - b. Calculations and analysis is increased
  - c. Both a & b
  - d. None of the above
- (xiii) In a dynamic channel assignment strategy,
- a. Voice channels are not permanently assigned
  - b. The serving base station requests for a channel from MSC
  - c. MSC allocates the channel according to the predetermined algorithm
  - d. All of the above
- (xiv) Inter system Handoffs are done
- a. When mobile station moves in two cellular systems with different MSC
  - b. When mobile station moves between two cellular systems
  - c. When mobile station receives more power from other base station than the serving base station
  - d. All of the above
- (xv) In Mobile Assisted Handoff (MAHO), the handoff takes place when
- a. The power received by the mobile station from other base station is more than the serving base station
  - b. The channel allocated is not available
  - c. The mobile station has no signal
  - d. All of the above

- (xvi) Trunking in a cellular network refers to
- Termination of a call
  - Spectrum unavailability
  - Accommodating large number of users in limited spectrum
  - All of the above
- (xvii) Interference in frequency bands may lead to
- Cross talk
  - Missed Call
  - Blocked Call
  - All of the above
- (xviii) The techniques used to improve the capacity of cellular systems are
- Splitting
  - Sectoring
  - Coverage zone approach
  - All of the above
- (xix) Fading is caused due to
- Multi path propagation
  - Obstacles
  - Frequency variations at the source
  - Variation in amplitude and phase at receiver
- (xx) The free space model of propagation refers to
- Unobstructed line of sight between the transmitter and receiver
  - Satellite communication systems and Microwave line of sight radio links
  - Propagation along the ground surface
  - a and b are correct
- (xxi) Spread spectrum modulation involves
- PN sequence for modulation
  - Large bandwidth
  - Multiple users
  - All the three are correct
- (xxii) PN sequence at the decoder acts as a locally generated carrier at the receiver and decodes the signal using
- Correlator
  - Adder
  - Frequency divider
  - PLL
- (xxiii) Working of Adaptive Equalizers include
- Training
  - Tracking
  - Modulation
  - Both a and b
- (xxiv) The Linear Equalizer may be implemented as
- FIR filter
  - Lattice filter
  - Low pass filter
  - Both a and b
- (xxv) RAKE receiver is
- Several sub receivers
  - Several correlators
  - Fingers
  - Equalization based

**Group – B**

(Short Answer Type Questions)

4 x 5 = 20

Answer any *four* from the following

- |    |     |  |   |
|----|-----|--|---|
| 2. | (a) | What are the technical issues in planning of a cellular network? | 3 |
|    | (b) | What is near-far effect in wireless network?                     | 2 |
| 3. | (a) | Differentiate hard and soft handoff?                             | 3 |
|    | (b) | How are guard spaces realized between users in CDMA?             | 2 |
| 4. | (a) | What are the disadvantages of cellular systems with small cells? | 2 |
|    | (b) | Is IEEE 802.11 and Wi-Fi same? State the purpose of WiFi.        | 3 |
| 5. | (a) | Mention the function of the base station.                        | 3 |
|    | (b) | What are the functions of MSC?                                   | 2 |
| 6. |     | Why 800 MHz frequency is selected for mobiles?                   | 5 |
| 7. | (a) | State the expression used to locate co channel cells.            | 3 |
|    | (b) | Define co channel cells.   | 2 |

**Group – C**

(Long Answer Type Questions)

3 x 10 = 30

Answer any *three* from the following

- |     |     |   |    |
|-----|-----|---|----|
| 8.  | (a) | What is the primary goal of IEE 802.11? | 5  |
|     | (b) | What are Advantages of wireless LAN?    | 5  |
| 9.  | (a) | What is meant by GPRS?                  | 5  |
|     | (b) | What do you meant by roaming?           | 5  |
| 10. | (a) | What are the requirements of Mobile IP? | 5  |
|     | (b) | Define COA.                             | 5  |
| 11. |     | What is Route Maintenance?              | 10 |
| 12. | (a) | What is route discovery?                | 5  |
|     | (b) | What is DHCP?                           | 5  |

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