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BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – MCA-2022/MCA-2023
Course Name – Mobile Computing
Course Code - MCA403A
(Semester IV)

Full Marks : 60

Time : 2:30 Hours

[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)

1 x 15=15

1. Choose the correct alternative from the following :

(i) Identify the name from the options who developed World's first cellular system

- | | |
|---|--------------------------|
| a) Nippon Telephone and Telegraph (NTT) | b) Bellcore and Motorola |
| c) AT&T Bell Laboratories | d) Qualcomm |

(ii) What is PCN?

- | | |
|---|------------------------|
| a) Wireless concept of making calls | b) For receiving calls |
| c) Irrespective of the location of the user | d) All of these |

(iii) Which of the following wireless network covers a large geographical area?

- | | |
|------------------------------|-----------------------|
| a) Personal area network | b) Local area network |
| c) Metropolitan area network | d) Wide area network |

(iv) Tell, an internet is a _____

- | | |
|-----------------------|--|
| a) Collection of WANS | b) Network of networks |
| c) Collection of LANS | d) Collection of identical LANS and WANS |

(v) Which of the following bands are available for use by license-free transmitters?

- | | |
|-------------------|----------------------------|
| a) 902 to 928 MHz | b) 2.4 to 2.5 GHz |
| c) 5.7 to 5.8 GHz | d) Interpreted incorrectly |

(vi) Select the correct option, "Cellular networks use the concept of ____."

- | | |
|--------------------------|-------------------------|
| a) Doubling of frequency | b) Half-power frequency |
| c) Frequency Re-use | d) Multiple Frequencies |

(vii) Select the correct option, "Reverse Channel in GSM used for transmission of information from _____ to _____?"

- | | |
|---------------------------------|---------------------------------|
| a) Mobile phone to Base station | b) Base Station to Mobile Phone |
| c) Cell to Cell | d) None of these |

(viii) Select the correct option, "Cellular technology replaces _____ with _____."

- | | |
|---|-----------------|
| a) Single High-power Transmitter, Several Low Power Transmitters. | b) FSK with PSK |
|---|-----------------|

- c) TDD with FDD
- d) Single Low Power Transmitter, Several low power Transmitters.
- (ix) "A mobile computing environment, in general, can be represent as a type of a _____ environment as well." Select a option that is fit for the blank space
- a) Mobile computing
 b) Distributed computing
 c) Grid computing
 d) None of these
- (x) Select the correct option, "The wide band usage in CDMA helps in -1. Increased immunity to interference ,2. Increased immunity to jamming ,3. Multiple user access ,4. Different spectrum allocation in different time slots"
- a) 1,2 and 3 are correct
 b) 2,3 and 4 are correct
 c) 1, 2 and 4 are correct
 d) All the four are correct
- (xi) The _____ uses radio-wave frequencies to send data directly between transmitters and receivers
- a) Satellite Transmission
 b) Microwave Transmission
 c) Hotspot
 d) Radio Transmission
- (xii) The increase in number of users in PURE ALOHA causes
- a) Increase in delay
 b) Increase in probability of collision
 c) Increase in spectrum
 d) Both Increase in delay and Increase in probability of collision
- (xiii) Focus which of the following type of protocol is cannot be used for mobile ad hoc networks?
- a) Adhoc networks
 b) Mobile networks
 c) Routing protocols
 d) DHSS
- (xiv) What layer in the TCP/IP stack is equivalent to the Transport layer of the OSI model?
- a) Application
 b) Host to host
 c) Internet
 d) Network Access
- (xv) A wireless system that beams uninterrupted, near CD-quality music to your radio from satellites is:
- a) Infrared
 b) Satellite Transmission
 c) Satellite Radio
 d) Wireless

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Describe the architecture of a Wireless Local Loop. (3)
3. Distinguish between DSSS and FHSS. (3)
4. Describe the working of DHCP in Mobile computing with neat diagram. (3)
5. Show the characteristics of 5G Cellular Networks. (3)
6. List out two Hand-off prioritization techniques. (3)

OR

Explain the key mechanism in Mobile IP. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Explain about the middleware and gateways used in a mobile computing environment. (5)
8. With the help of a diagram, explain Tier-II of the three-tier architecture. (5)
9. Critique the terms (i) Client Context Manager (ii) Policy Manager (iii) Security Manager (iv) Adaptability Manager (5)
10. Construct the different algorithms used for security and authentication in GSM. (5)
11. Analyze how call routing is done in GSM. Give an example. (5)
12. What is meant by Agent Discovery in IP routing? Explain the format of Agent Advertisement Packet. (5)

OR
Argue the types of communication in a MANET.

(5)

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