

(8 pages)

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Code No. : 8388

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M.C.A. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2024

Third Semester

Computer Applications – Core

MOBILE COMPUTING

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. What is a primary application of wireless communication?
 - (a) Mobile telephony
 - (b) Graphic design
 - (c) Database management
 - (d) Desktop publishing

2. Which frequency range is commonly used for radio transmission?
 - (a) 300 MHz to 3 GHz
 - (b) 300 GHz to 3 THz
 - (c) 3 Hz to 30 Hz
 - (d) 30 MHz to 300 MHz
3. What is an antenna used for in wireless communication?
 - (a) To transmit and receive radio signals
 - (b) To store data
 - (c) To process graphics
 - (d) To execute programs
4. What is the main purpose of spread spectrum techniques?
 - (a) To decrease the range of communication
 - (b) To increase bandwidth and reduce interference
 - (c) To simplify the hardware requirements
 - (d) To increase the data rate
5. What does SDMA stand for?
 - (a) Spatial Division Multiple Access
 - (b) Signal Division Multiple Access
 - (c) Serial Data Multiple Access
 - (d) Synchronous Data Multiple Access

6. What technique does CDMA use to allow multiple users to share the same frequency band?
- (a) Assigning unique codes to each user
 - (b) Dividing the channel into time slots
 - (c) Reserving time slots for each user
 - (d) Dividing the frequency band into multiple channels
7. What modulation technique is primarily used in GSM for transmitting data over the air interface?
- (a) Frequency Hopping Spread Spectrum
 - (b) Code Division Multiple Access
 - (c) Frequency Division Multiple Access
 - (d) Gaussian Minimum Shift Keying
8. Which process in GSM is used to update the network with the location of a mobile device?
- (a) Handover
 - (b) Authentication
 - (c) Registration
 - (d) Paging
9. Which of the following is a key advantage of using satellite systems for communication?
- (a) Low latency
 - (b) Wide coverage area
 - (c) High data rates
 - (d) Low power consumption

10. Which technology is used for radio transmission in Wireless LANs?
- (a) Bluetooth
 - (b) Zigbee
 - (c) Wi-Fi
 - (d) Ultra-Wideband
11. Which component is essential in an infrastructure mode wireless LAN?
- (a) Mobile node
 - (b) Access point
 - (c) Network Interface Card
 - (d) Repeater
12. Which IEEE 802.11 standard operates in the 5 GHz band and provides high-speed data transfer rates?
- (a) 802.11a
 - (b) 802.11b
 - (c) 802.11g
 - (d) 802.11n
13. What is the main function of the Wireless Session Protocol (WSP) in the WAP architecture?
- (a) To manage the transport layer security
 - (b) To support datagram-based communication
 - (c) To handle session management and control
 - (d) To provide a standard for wireless transactions

14. Which of the following is a proactive routing protocol used in MANETs?
- (a) AODV (b) DSR
(c) DSDV (d) TORA
15. What is the primary purpose of the Destination-sequenced Distance Vector (DSDV) protocol in MANETs?
- (a) To discover routes only when necessary
(b) To maintain consistent and Up-to-date routing tables
(c) To provide high-speed data transmission
(d) To manage session control and maintenance

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

16. (a) Discuss the significance of frequency regulation in wireless communication.
- Or
- (b) Describe about multi-path propagation in wireless communication.

17. (a) Explain Spread Spectrum and its main types.
- Or
- (b) Describe the different Medium Access Control (MAC) techniques.
18. (a) Write a short note on basic architecture of a GSM network.
- Or
- (b) Mention the key features and services provided by UMTS.
19. (a) Explain the concept of infrastructure and ad-hoc networks in Wireless LANs.
- Or
- (b) Define the primary goals and requirements of Mobile IP.
20. (a) Elaborate the Wireless Datagram Protocol (WDP) and its function.
- Or
- (b) Illustrate the key features and functions of Wireless Transport Layer Security (WTLS) in the WAP architecture.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

21. (a) Discuss the evolution, key milestones, technological advancements and impact of wireless communication.

Or

- (b) Explain the concepts of multiplexing and modulation in wireless communication with example.

22. (a) Write the concepts of Hidden Terminal and Exposed Terminal problems in Medium Access Control (MAC) and its issues.

Or

- (b) Compare Classical Aloha and Slotted Aloha protocols.

23. (a) Describe about the handover process and its types in GSM networks.

Or

- (b) Elaborate the role, application and working of satellite systems in modern communication.

24. (a) Illustrate the differences between infrared and radio transmission in Wireless LANs.

Or

- (b) Explain brief about the system architecture and protocol architecture of IEEE 802.11.

25. (a) Describe the architecture, role and key components of Wireless Application Protocol (WAP).

Or

- (b) Compare and contrast proactive and reactive routing protocols in MANETs and discuss their advantages, disadvantages, and typical use cases.