

**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024**

Fifth Semester

**Computer Science and Engineering**

(Common to Computer Science and Engineering (IoT))

**20CSPC503 - MOBILE COMPUTING**

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

**PART - A (MCQ) (20 × 1 = 20 Marks)**

Answer ALL Questions

	<i>Marks</i>	<i>K – Level</i>	<i>CO</i>
1. What is the primary role of unique codes in the CDMA MAC Protocol? (a) Separating user transmissions (b) Reducing network latency (c) Managing encryption keys (d) Dynamic modulation	1	K1	CO1
2. The hidden terminal problem occurs when: (a) Devices can see each other but can't communicate (b) Devices are not within each other's range but cause collisions (c) The network is overloaded (d) There is signal interference	1	K1	CO1
3. What is the primary role of unique codes in the CDMA MAC Protocol? (a) Separating user transmissions (b) Reducing network latency (c) Managing encryption keys (d) Dynamic modulation	1	K1	CO1
4. What is the main feature of General Packet Radio Service (GPRS)? (a) Circuit-switched data (b) Packet-switched data (c) Voice communication (d) Video streaming		K1	CO2
5. Which technology is known as the "2.5G" technology? (a) GSM (b) GPRS (c) UMTS (d) LTE	1	K1	CO2
6. What is the purpose of the HLR in GSM? (a) Managing billing (b) Storing subscriber information (c) Handling voice calls (d) Performing encryption	1	K1	CO2
7. Which technology introduced in 3G is known for offering higher data rates than GSM? (a) GPRS (b) EDGE (c) UMTS (d) LTE	1	K1	CO3
8. What does 5G NR stand for? (a) 5G New Radio (b) 5G Network Resource (c) 5G Next Release (d) 5G National Regulation	1	K1	CO3
9. What is the main feature of LTE that differentiates it from UMTS? (a) Circuit-switched technology (b) Packet-switched technology (c) Analog transmission (d) Voice-only support	1	K1	CO3
10. Which protocol combines both proactive and reactive routing approaches? (a) DSDV (b) AODV (c) ZRP (d) DSR	1	K1	CO4
11. What is the process called when a mobile node changes its point of attachment to the network? (a) Roaming (b) Tunneling (c) Handoff (d) Authentication	1	K1	CO4
12. What protocol is used by the Foreign Agent to inform the mobile node about its presence? (a) ICMP (b) ARP (c) Router Advertisement (d) DHCP	1	K1	CO4
13. Which of the following is a feature of TCP-I? (a) Delay-tolerant networking (b) Enhanced error recovery (c) Support for mobile nodes (d) Load balancing	1	K1	CO5

- |   |   |    |     |
|---|---|----|-----|
| 14. What does WAP stand for?  | 1 | K1 | CO5 |
| (a) Wireless Application Program  |   |    |     |
| (b) Wireless Access Protocol  |   |    |     |
| (c) Wireless Application Protocol   |   |    |     |
| (d) Wireless Area Protocol  |   |    |     |
| 15. WDP in the WAP architecture corresponds to which of the following layers? | 1 | K1 | CO5 |
| (a) Transport Layer   |   |    |     |
| (b) Network Layer   |   |    |     |
| (c) Session Layer   |   |    |     |
| (d) Application Layer   |   |    |     |
| 16. Which WAP layer corresponds to the OSI model's Application layer?         | 1 | K1 | CO5 |
| (a) WML   |   |    |     |
| (b) WAE   |   |    |     |
| (c) WDP   |   |    |     |
| (d) WSP   |   |    |     |
| 17. Which company developed the IOS operating system?                         | 1 | K1 | CO6 |
| (a) Google  |   |    |     |
| (b) Apple   |   |    |     |
| (c) Microsoft   |   |    |     |
| (d) BlackBerry  |   |    |     |
| 18. Which operating system was primarily used on Nokia smartphones?           | 1 | K1 | CO6 |
| (a) IOS   |   |    |     |
| (b) Windows Phone   |   |    |     |
| (c) Symbian   |   |    |     |
| (d) Tizen   |   |    |     |
| 19. Find the official IDE for Android development.                            | 1 | K1 | CO6 |
| (a) Xcode   |   |    |     |
| (b) Eclipse   |   |    |     |
| (c) Android Studio  |   |    |     |
| (d) NetBeans  |   |    |     |
| 20. Which of the following is a popular M-commerce platform?                  | 1 | K1 | CO6 |
| (a) eBay  |   |    |     |
| (b) YouTube   |   |    |     |
| (c) Microsoft Office  |   |    |     |
| (d) Excel   |   |    |     |

**PART - B (10 × 2 = 20 Marks)**

Answer ALL Questions

- |  |   |    |     |
|--|---|----|-----|
| 21. What are the Characteristics of Mobile computing?                              | 2 | K1 | CO1 |
| 22. Compare CSMA / CD and CSMA/CA.   | 2 | K2 | CO1 |
| 23. List the advantages and disadvantages of a cellular system.                    | 2 | K1 | CO2 |
| 24. Differentiate GPRS from GSM in terms of architecture elements.                 | 2 | K2 | CO2 |
| 25. List the role of the Node B in the UMTS architecture.                          | 2 | K1 | CO3 |
| 26. Differentiate UMTS networks from 2G networks.                                  | 2 | K2 | CO3 |
| 27. Difference between Proactive & Reactive protocols.                             | 2 | K2 | CO4 |
| 28. Outline the reason for traditional routing strategies not deployed in a MANET. | 2 | K2 | CO4 |
| 29. Distinguish between HTML and WML.  | 2 | K2 | CO5 |
| 30. Why is microkernel preferred for developing a mobile OS? Justify.              | 2 | K1 | CO6 |

**PART - C (6 × 10 = 60 Marks)**

Answer ALL Questions

- |   |    |    |     |
|---|----|----|-----|
| 31. a) Explain the different Wireless MAC protocol issues in mobile computing.                                | 10 | K2 | CO1 |
| <b>OR</b>   |    |    |     |
| b) Explain in detail about mobile computing applications in various sectors.                                  | 10 | K2 | CO1 |
| 32. a) Draw and explain the system architecture of GSM in detail.   | 10 | K2 | CO2 |
| <b>OR</b>   |    |    |     |
| b) Draw and explain the protocol architecture of GPRS.  | 10 | K2 | CO2 |
| 33. a) Draw and Explain the architecture of LTE and explain the elements present in that.                     | 10 | K2 | CO3 |
| b) Describe the challenges faced during the deployment of LTE and UMTS networks.                              | 10 | K2 | CO3 |
| 34. a) Demonstrate the key mechanism of mobile IP with the help of a suitable schematic diagram and examples. | 10 | K2 | CO4 |
| <b>OR</b>   |    |    |     |
| b) Explain in detail about Zone Routing Protocol with route request and response procedure.                   | 10 | K2 | CO4 |
| 35. a) Explain the WAP architecture with neat sketch for mobile communication system.                         | 10 | K2 | CO5 |

**OR**

- b) i) Briefly explain about WTLS with neat Sketches. 5 K2 CO5  
ii) Summarize the WDP protocol and draw the working flow architecture of WDP. 5 K2 CO5

36. a) Explain in detail about different commercial mobile operating systems. 10 K2 CO6

**OR**

- b) Describe the mobile payment system and its security issues. 10 K2 CO6