No. of Printed Pages : 4

Sl. No.

CE1.5-R4 : MOBILE COMPUTING

DURATION : 03 Hours **MAXIMUM MARKS : 100**

Roll No. : | | | | | | |

Answer Sheet No. : | | | | | | |

Name of Candidate : _____ **; Signature of Candidate :** _____

INSTRUCTIONS FOR CANDIDATES :

- Carefully read the instructions given on Question Paper, Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English Language only.
- **Question paper contains Seven questions. The Question No. 1 is compulsory. Attempt any FOUR Questions from Question No. 2 to 7.**
- **Parts of the same question should be answered together and in the same sequence.**
- **Questions are** to be answered in the **ANSWER SHEET** only, supplied with the Question Paper.
- **Candidate cannot leave the examination hall/ room without signing on the attendance sheet and handing over his/her Answer Sheet to the Invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

1. (a) Explain the core difference between WCDMA and traditional CDMA systems.

(b) Describe any two key limitations of mobile devices and how these limitations affect the user experience for certain tasks.

(c) Explain the concept of Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) in the context of wireless networks.

(d) Explain the basic concept of Mobile IP and its role in enabling seamless communication for mobile devices.

(e) Explain any two key limitations of TCP in wireless environments and how these limitations impact application performance.

(f) Describe the basic client-server computing architecture, including the roles of clients and servers.

(g) Explain the concept of mobile agents and how they differ from the client-server model in terms of task execution and communication. **(7x4)**

2. (a) Briefly describe two main requirements that a mobile OS needs to address that are not as critical for a desktop OS.

(b) Write the short note on WML (Wireless Markup Language) and XHTML Mobile Profile (XHTML-MP).

(c) Discuss the role of IMT-2000 in relation to UMTS and WCDMA. **(6+6+6)**

3. (a) Differentiate between infrastructure-based and ad-hoc network topologies.

(b) Discuss the trade-offs between portability, processing power, and battery life for different mobile device categories.

(c) Discuss the advantages and disadvantages of DSR (Dynamic Source Routing) and AODV (Ad hoc on-demand Distance Vector) for routing in dynamic network environments. **(3+10+5)**

4. (a) Discuss the challenges associated with handover management, such as minimizing connection delays and ensuring data packet delivery during the transition.

(b) Describe the basic functionalities of Snooping TCP and Indirect TCP.

(c) Explain the concept of communication asymmetry and discuss two data delivery mechanisms. **(5+5+8)**

5. (a) Explain the process of query processing on the server side. How do data recovery mechanisms ensure that clients can access the latest data ?

(b) Describe the role of service discovery protocols in helping mobile devices locate and access available services.

(c) Briefly describe the historical context surrounding the decline of Symbian OS and Palm OS. **(6+6+6)**

6. (a) Explain the distinction between security protocols and encryption algorithms.

(b) Discuss the advantages and disadvantages of J2ME for mobile application development.

(c) Compare and contrast the behavior of fast retransmit/recovery with other TCP variants like TCP-Freeze or Transaction-Oriented TCP. **(4+10+4)**

7. (a) Explain how does TDMA technology facilitate handover (call transfer) between cells while a user is in motion, and what are the security challenges associated with this process ?

(b) Explain the key differences between caching and hoarding strategies. In what scenarios might one approach be preferred over the other ? **(9+9)**

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SPACE FOR ROUGH WORK