No. of Printed Pages : **2**

Sl. No.

CE1.5-R4 : MOBILE COMPUTING

NOTE :

1. **Answer question 1 and any FOUR questions from 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Total Time : 3 Hours **Total Marks : 100**

1. (a) What are the fundamental architectural components that enable seamless mobility in computing devices ?

(b) What are the key limitations inherent in mobile devices compared to their desktop counterparts ?

(c) How does GSM ensure security in its operations, particularly concerning user data and communication privacy ?

(d) Discuss the mechanisms of hoarding and caching in managing the mobile data databases.

(e) How does the Basic MAC protocol CSMA/CA facilitate efficient data transmission in wireless networks ?

(f) Examine the efficacy of routing algorithms such as DSR, AODV and TORA in mobile ad hoc networks.

(g) How do trust-based security models and frameworks contribute to enhancing information security in modern computing environments ? **(7x4)**

2. (a) Describe the fundamental concepts of mobile computing and its basic architecture.

(b) Explain the role of General Packet Radio Service (GPRS) in enhancing data transmission within GSM networks.

(c) What are Mobile agents ? What role these agents play in mobile communication ? **(6+6+6)**

3. (a) Explore the role of Bluetooth and ZigBee in local area mobile communication access.

(b) Explore the significance of gateways in mobile communication networks. How do gateways facilitate seamless connectivity between different network domains and protocols ?

(c) Investigate transaction models in mobile databases. How do transactional mechanisms ensure data integrity and consistency in mobile computing ? **(3+10+5)**

4. (a) Write the features and syntax of Wireless Markup Language (WML) and XML, J2ME in the context of mobile programming.

(b) Discuss the evolution of mobile markup languages and their compatibility with various mobile devices.

(c) Discuss the limitations of TCP in mobile wireless systems. How do factors such as high latency and packet loss affect TCP performance in mobile networks ? **(5+5+8)**

5. (a) Explain TCP fixes such as Snooping and Indirect TCP designed to improve TCP performance in mobile wireless systems.

(b) Explain the design considerations for transaction management, including concurrency control, isolation levels, and recovery techniques tailored for mobile devices.

(c) Analyze the importance of service discovery mechanisms in mobile computing. **(6+6+6)**

6. (a) How does Symbian OS address the needs of mobile devices, including smart phones and feature phones ?

(b) What are the essential functionalities and characteristics that distinguish mobile OS from traditional desktop OS ?

(c) Discuss the unique requirements and challenges associated with designing OS for mobile devices. **(4+10+4)**

7. (a) Explain the IEEE 802.11 standards and their significance in local area mobile communication access.

(b) What measures are in place to address security concerns in GSM networks ? **(9+9)**

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