

CE1.5-R4: MOBILE COMPUTING

NOTE:

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

Time: 3 Hours

Total Marks: 100

1.

- a) What are the hidden terminal and the exposed terminal problems? Identify methods to overcome these.
- b) What are RTS/CTS in 802.11? What services does it provide and how is it implemented?
- c) Mobile IP has been commonly used to allow mobility in networks, especially in heterogeneous network. Describe how mobile IP allows users to move between network boundaries.
- d) Differentiate between infrastructure networks and Adhoc networks.
- e) What is WAE in WAP? What does a WAE comprise of?
- f) If Bluetooth is a commercial success, what are remaining reasons for the use of infrared (IR) transmission for WPAN?
- g) How and why does I-TCP isolate problem on the wireless link? What is the main drawback of this solution? Could you give nay suggestion to resolve the problems?

(7x4)

2.

- a) Compare IEEE 802.11, HIPERLAN and Bluetooth with regards to their ad-hoc capabilities, where is the focus of these technologies?
- b) Explain power management IEEE 802.11 infrastructure networks and ad-hoc networks.

(9+9)

3.

- a) How can DHCP be used for mobility and support of mobility?
- b) Describe how the tunneling works for mobile IP using IP-in-IP, minimal and generic routing encapsulation.

(9+9)

4.

- a) Draw and explain the frame structure of UTRA-FDD (W-CDMA).
- b) Explain GPRS architecture and show the protocol architecture of the transmission plane for GPRS.

(9+9)

5.

- a) What are the primary goals of WAP forum and how are they reflected in the WAP protocol architecture.
- b) What are the implications of mobility on application design and system design (operating system and network layers)?

(9+9)

6.

- a) Explain the errors in wireless networks that degrades the performance of TCP and how TCP snooping can improve the situation.
- b) Write a short note on Mobile QoS in WATM networks.

(9+9)

7.

- a) Write a WML script to create a typical login page asking for a username and password can be constructed. The username is forced to consist entirely of lowercase letters, and the password is obscured when it's entered.
- b) Explain how the following differ: fragmentation transparency, replication transparency, and location transparency.
- c) Transaction server architectures are popular for client-server relational databases, where transactions are short. On the other hand, data server architectures are popular for object-oriented database systems, where transactions are expected to be relatively long. Give two reasons why data servers may be popular for object-oriented databases but not for relational databases.

(6+6+6)