Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

I SEMESTER M.TECH. (COMPUTER NETWORKING AND ENGINEERING)
DEGREE END SEMESTER EXAMINATIONS, NOV 2019

SUBJECT: MOBILE COMPUTING [ICT 5173]

REVISED CREDIT SYSTEM
(21/11/2019)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

1A. Explain the different approaches of application-aware adaptation strategies in mobile computing environment. **5**

1B. Explain suitable mobile agent tracking schemes for following requirements **3**

i) Simple to implement and has less communication overhead

ii) Less reliance on the agent home for agent tracking or message forwarding

1C. Compare WiFi and WiMAX QoS parameters and list the QoS mapping values for WiMAX/WiFi hybrid network. **2**

2A. Explain layer 2 security mechanisms of IEEE 802.15.4. Why does IEEE 802.15.4 never use a nonce twice? **5**

2B. For Pattern (P) = 110011 and Message (M) = 11100011, find the Cyclic Redundancy Check (CRC). **3**

2C. Write the appropriate reasons for preferring TDD over FDD in Mobile WiMAX. **2**

3A. Explain different categories of protocols derived from mailbox-based framework for mobile agent. **5**

3B. List and explain the advantages of OFDM that work well in providing high speed data services for NGMN. **3**

3C. How does co-channel interference is resolved in Mobile WiMAX? Explain with a suitable diagram. **2**

4A. Consider that a document of size 4 MB needs to be fetched from server to client through a proxy. The round-trip delays between proxy to client and server to proxy are 300 ms and 600 ms respectively. For transcoding the document, proxy consumes 7 ms and transcoded document size is 3 MB. If proxy-to-client and server-to-proxy bandwidth are 2 MB/s and 3 MB/s, calculate the total delay for document retrieval without the proxy and with the proxy. **5**

4B. What is a cognitive transceiver? With suitable diagram, briefly explain basic structure of cognitive transceiver and RF front end. **3**

4C. Explain the meaning following Linda primitives. **2**

i) in("sum",?i,?j)

ii) rd("sum",?i,?j)

iii) eval("ab",-6,abs(-6))

iv) eval("roots",sqrt(4),sqrt(16))

5A. Explain uplink and downlink physical channels of UMTS. **5**

5B. What are the different types of detectors that are commonly used for spectrum sensing? Explain a spectrum detection technique used when a sensor has no information about the signal structure. **3**

5C. What is an UMTS interface link? Briefly explain any two such interfaces. **2**