MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH. (INFORMATION TECHNOLOGY | COMPUTER AND COMMUNICATION ENGINEERING)

END SEMESTER EXAMINATIONS, NOVEMBER 2019

SUBJECT: PROGRAM ELECTIVE-IV INTERNET OF THINGS [ICT 4019]

REVISED CREDIT SYSTEM
(23/11/2019)

Time: 3 Hours   MAX. MARKS: 50

Instructions to Candidates:
- ❖ Answer **ALL** the questions.
- ❖ Missing data, if any, may be suitably assumed.

1A. Write notes on various types of sensor nodes based on mobility. Explain the following terms with respect to sensor fundamentals.   **5**

(i) Range   (ii)Zero drift   (iii)Linearity   (iv)Quantization error

1B. Discuss the major components in IoT implementation. Mention the challenges in IoT implementation.   **3**

1C. Differentiate between SCADA systems and Cyber-physical systems.   **2**

2A. List and explain the technologies involved in smart object connectivity.   **5**

2B. Draw and explain the functional layers of an IoT solution.   **3**

2C. Analyze the benefits of using CoAP protocol over HTTP in Internet of things applications.   **2**

3A. Explain in detail the vulnerabilities and different types of attacks in smart grid.   **5**

3B. Apply query tree protocol and binary tree protocol to identify multiple RFID tags simultaneously when Tag1=0100, Tag2=0111 and Tag3=1010 respectively.   **3**

3C. Differentiate between the following with respect to Internet of things technology.   **2**
(i) Middleware   (ii)Gateway

4A. With the help of data flow diagram explain wireless body area network (WBAN). State the network requirements of WBAN. Explain various traffic supported by WBAN.   **5**

4B. Describe application unit and interaction unit of a smart vehicle? Explain the advantages of CCN in VANET.   **3**

4C. Explain in brief any four M2M features.   **2**

5A. Draw and explain the various layers of IEEE 802.15.4 protocol. Explain the various topologies supported by 802.15.4 protocol.   **5**

5B. What are the four pillars of IoT? State the challenges involved in IoT implementation.   **3**

5C. Explain node level challenges and network level challenges of smart objects   **2**