CBCS SCHEME

USN | | | | | | | | | | |

15EC752

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
IOT and Wireless Sensor Networks

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain any two IOT conceptual frameworks. **(06 Marks)**
b. With neat diagram, explain the M2M architecture. **(04 Marks)**
c. Describe MQTT protocol for M2M/IOT connectivity. **(06 Marks)**

OR

2 a. Describe the IOT reference model suggested by CISCO that gives a conceptual framework for a general IOT system. **(06 Marks)**
b. Explain how data enrichment can be achieved before data dissemination to the network. **(04 Marks)**
c. Describe the XMPP protocol. **(06 Marks)**

Module-2

3 a. With neat diagram, show how the four layers generate data stack for the network and physical layers during internet communication. **(06 Marks)**
b. Explain the functions of HTTP and HTTPs ports. **(04 Marks)**
c. List any six features in Nimbits cloud platforms. **(06 Marks)**

OR

4 a. What are the features of IPv4 and IPv6 protocols? **(05 Marks)**
b. With neat diagram, explain 6LoWPAN adaptation layer protocol for IEEE 802.15.4 network device. **(06 Marks)**
c. With examples, explain the four cloud service models. **(05 Marks)**

Module-3

5 a. Explain how Arduino platform is programmed using IDE. **(08 Marks)**
b. What is an IoT reference architecture with respect to the function group component. Illustrate a threat analysis tool for analysis during a stride. **(08 Marks)**

OR

6 a. Describe how the data is read from the sensors and devices. **(08 Marks)**
b. Explain a layered attacker model with possible attacks and suggest the solutions for mitigating the attacks on the layers. **(08 Marks)**

Module-4

7	a.	Explain the characteristic requirements for a Wireless Sensor Networks.	(06 Marks)
	b.	With a neat diagram, describe a single node architecture in a wireless sensor networks.	(06 Marks)
	c.	Write a program to wiring components to form a configuration.	(04 Marks)

OR

8	a.	What are the enabling technologies for Wireless Sensor Networks?	(06 Marks)
	b.	Distinguish the four transceiver operational states.	(04 Marks)
	c.	Differentiate event based programming and process based programming.	(06 Marks)

Module-5

9	a.	Explain low duty cycle and wake-up concepts in Wireless Sensor Networks.	(06 Marks)
	b.	With relevant diagram, explain LEACH protocol.	(06 Marks)
	c.	State and explain Right–Hand Rule to Recover Greedy Routing (GPSR).	(04 Marks)

OR

10	a.	With neat schematic diagram, explain CSMA protocol.	(06 Marks)
	b.	Explain the SMAC protocol.	(06 Marks)
	c.	Explain how passive clustering can be achieved in Wireless Sensors Networks.	(04 Marks)

* * * * *

CBCS SCHEME

USN | | | | | | | | | |

15EC752

Seventh Semester B.E. Degree Examination, June/July 2019
IOT and Wireless Sensor Networks

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What is Internet of Things (IOT)? Explain the roles of "Things" and 'Internet' in IOT. **(04 Marks)**

b. What is Machine – to – Machine (M2M) communication? What are the differences between IOT and M2M communication? **(04 Marks)**

c. Explain with a neat diagram the modified ISO model with protocols used in each layer for IOT/M2M systems. **(08 Marks)**

OR

2 a. Explain challenges in developing IOT applications. **(04 Marks)**

b. Explain in detail the enabling technologies for Internet of Things (IOT). **(04 Marks)**

c. Explain in detail the advantages and disadvantages of IOT. **(08 Marks)**

Module-2

3 a. Write a note on importance of networking protocol 6 LOWPAN in IOT. **(04 Marks)**

b. Explain in detail the Architecture of IOT with a neat diagram. **(08 Marks)**

c. What is Industrial Internet of Things (IIOT) and how IIOT is different from IOT? **(04 Marks)**

OR

4 a. What is the role of cloud computing in IOT? **(04 Marks)**

b. Explain in detail different cloud service models used in IOT. **(08 Marks)**

c. How Internet addresses (IPV6) might affect the development and implementation of IOT? **(04 Marks)**

Module-3

5 a. Explain in detail the vulnerabilities Internet of Things (IOT). **(04 Marks)**

b. What is IOT Security Tomography? Explain in detail the layered attacker model. **(06 Marks)**

c. Explain how threat analysis for a system is performed using Microsoft Threat Modeling Tool? **(06 Marks)**

OR

6 a. Write a short note on Arduino programming for IOT? **(05 Marks)**

b. Explain with example MQTT protocol. **(05 Marks)**

c. Why security is required in IOT? Explain in brief various security models in IOT. **(06 Marks)**

Module-4

7 a. What is WSN? Explain in detail the architecture of WSN with a diagram. **(08 Marks)**

b. Explain the different categories of sensors. **(03 Marks)**

c. Explain in detail optimization goals and figures of merit in WSN. **(05 Marks)**

15EC752

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
IOT and Wireless Sensor Networks

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Define IOT and explain an IOT reference model suggested by CISCO. **(06 Marks)**
b. Write and explain four layer architectural frameworks developed at CISCO for a city. **(04 Marks)**
c. Write and explain modified OSI model for the IOT/M2M systems. **(06 Marks)**

OR

2 a. Explain Data Management and Consolidation Gateway. **(04 Marks)**
b. Explain Constrained Application Protocol (CoAP) for IOT/M2M **(06 Marks)**
c. Explain MQTT protocol for IOT. **(06 Marks)**

Module-2

3 a. Explain Internet protocol version 4. **(06 Marks)**
b. Explain IP Addressing. **(04 Marks)**
c. Explain HTTPS protocol. **(06 Marks)**

OR

4 a. Define cloud computing and write cloud platform services. **(04 Marks)**
b. Explain cloud service models. **(04 Marks)**
c. Explain IOT cloud based data collection, storage and computing services using Nimbits. **(08 Marks)**

Module-3

5 a. Write and explain Traffic light control program using Arduino uno. **(10 Marks)**
b. Explain in brief eclipse IOT stack. **(06 Marks)**

OR

6 a. Explain security requirements and threat Analysis. **(10 Marks)**
b. Explain Layer attacker model. **(06 Marks)**

Module-4

7 a. Explain characteristics requirement of wireless sensor Network. **(08 Marks)**
b. Explain sensor node Hardware components. **(08 Marks)**

OR

8 a. Explain optimization goals and figures of merit. **(08 Marks)**
b. Explain Gateway concepts. **(08 Marks)**

Module-5

9 a. Explain the most crucial points influencing physical layer in WSN. **(08 Marks)**
b. Explain important classes of MAC protocol. **(08 Marks)**

OR

10 a. Explain CSMA protocols. **(08 Marks)**
b. Explain energy efficient unicast routing. **(08 Marks)**