CBCS SCHEME

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15CS81

Eighth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Internet of Things Technology

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 IOT? Explain evolutionary phases of the internet. **(06 Marks)**
b. Explain Access Network sublayer with a neat diagram. **(06 Marks)**
c. What are the elements of one M2M IOT architecture? Explain. **(04 Marks)**

OR

2 a. Explain the functionality of IOT network management sub layer. **(05 Marks)**
b. Describe IOT World Forum (IOTWF) Standardized architecture. **(07 Marks)**
c. Compare and contrast IT and OT. **(04 Marks)**

Module-2

3 a. With a neat diagram, explain how actuators and sensors interact with physical world. Classify actuators based on energy type. **(08 Marks)**
b. List out the limitations of the smart objects in WSNs and explain the data aggregation in WSN with a neat diagram. **(08 Marks)**

OR

4 a. What is Zigbee? Explain 802.15.4 physical layer, MAC layer, and security. **(08 Marks)**
b. Explain LoRaWAN standard and alliance MAC layer and security. **(08 Marks)**

Module-3

5 a. With a neat diagram, explain 6LOWPAN protocol header comparison and fragmentation. **(08 Marks)**
b. List and explain the key advantages of internet protocol. **(04 Marks)**
c. Explain RPL encryption and authentication on constraint nodes. **(04 Marks)**

OR

6 a. Explain tunneling legacy SCADA over IP networks ad SCADA protocol translation with a neat diagram. **(08 Marks)**
b. Describe MQTT framework and message format in detail. **(08 Marks)**

Module-4

7 a. Explain the elements of Hadoop with a neat diagram. **(07 Marks)**
b. Explain neural network in machine learning with a detailed example. **(05 Marks)**
c. Describe the components of FNF. **(04 Marks)**

OR

8 a. Explain Formal Risk Analysis Structures. **(08 Marks)**
b. Explain the Purdue model for control hierarchy and OT network characteristics. **(08 Marks)**

Module-5

9 a. Explain the following with respect to Arduino programming. **(08 Marks)**
   i) Structure
   ii) Functions
   iii) Variables
   iv) Flow control statements
   v) Data type
   vi) Constants.

b. Explain Raspberry Pi learning board. **(08 Marks)**

OR

10 a. Write a pythan program on Raspberry Pi to blink an LED. **(06 Marks)**

b. Explain Smart city security architecture. **(06 Marks)**

c. Write a short note on :
   i) IOT challenges
   ii) Backhaul Technologies. **(04 Marks)**

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