CBCS SCHEME

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.
  i) Structure
  ii) Functions
  iii) Variables
  iv) Flow control statements
  v) Data type
  vi) Constants. **(08 Marks)**
  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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