CBCS SCHEME

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18EC741

Seventh Semester B.E. Degree Examination, June/July 2024
IoT and Wireless Sensor Networks

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Define IoT. Explain (i) Sources of IoT (ii) Technologies behind IoT. **(10 Marks)**

b. With a neat sketch describe IoT architecture by IBM. **(10 Marks)**

OR

2 a. Explain the four layer architecture frame work developed at CISCO for a smart city with diagram. **(10 Marks)**

b. Describe MQTT and XMPP protocol for M2M/IoT connectivity. **(10 Marks)**

Module-2

3 a. Explain IPV4 protocol and list its features. **(10 Marks)**

b. Explain different types of cloud and mention the main characteristics of cloud computing. **(10 Marks)**

OR

4 a. With a neat diagram, explain 6LOWPAN adaptation layer protocol for IEEE 802.15.4 Network device. **(10 Marks)**

b. Explain IoT cloud based data collection storage and computing services using Nimbits. **(10 Marks)**

Module-3

5 a. Write and explain Traffic Light Control program using Arduino uno. **(10 Marks)**

b. Explain with block diagram the five levels for software development for applications and service for IoT or M2M. **(10 Marks)**

OR

6 a. Write and explain a program to convert temperature sensor analog output to 10 bit digital ADC for a temperature range of '0' degree to '100' degree. **(10 Marks)**

b. Explain with diagram the layered attacker model and possible attacks using IETF six layer modified model for IoT/M2M. **(10 Marks)**

Module-4

7 a. Explain the characteristic requirements for a wireless sensor networks. **(10 Marks)**

b. Draw the block diagram of sensor node hardware component overview and explain each block in detail. **(10 Marks)**

OR

8 a. With diagram explain the following programming models for WSN operating system:
(i) Purely sequential execution model
(ii) Process-based execution model
(iii) Event based programming model. **(10 Marks)**

b. With respect to gateway concept explain
(i) WSN to Internet Communication
(ii) Interest to WSN communication (10 Marks)

Module-5

9 a. Explain three important classes of MAC protocols. (10 Marks)
b. With neat schematic explain CSMA protocols. (10 Marks)

OR

10 a. Explain Geographic routing with simple greedy forwarding and fails in presence of obstacles. (10 Marks)
b. Explain Hierarchical networks by clustering by considering overlapping, non overlapping and by two distributed gateways. (10 Marks)

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