

VTU B.E/B.TECH QUESTION PAPER SET

CBCS SEMESTER VII

IOT AND WIRELESS SENSOR NETWORKS

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Notes



Syllabus



Exams/Timetable



News



Results

USN

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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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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

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15EC752

Seventh Semester B.E. Degree Examination, Aug./Sept. 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. Define IOT and explain vision of IoT? (04 Marks)
 b. With neat sketch describe IoT architecture by IBM. (06 Marks)
 c. Explain different development tools and open source implementation of IOT. (06 Marks)

OR

- 2 a. Explain 4 layered architecture frame work for a smart application developed by CISCO. (06 Marks)
 b. Give JAVA Script Object (JSON) example in JAVA. (06 Marks)
 c. Explain the features of ThingSpeak and Nimbits. (04 Marks)

Module-2

- 3 a. With neat sketch, explain the internet connectivity protocols where source and end network layer connected through set of IP routers. (06 Marks)
 b. Explain the main features of IPV6 protocol. (06 Marks)
 c. Explain with neat sketch UDP datagram format for transmission or header fields. (04 Marks)

OR

- 4 a. Explain the main characteristics of cloud computing. (06 Marks)
 b. Explain in detail different types of cloud. (04 Marks)
 c. With neat sketch explain the different cloud computing service models. (06 Marks)

Module-3

- 5 a. Explain the programming embedded device Arduinoplatform using IDE. (08 Marks)
 b. Write the sample programming code for the arduino controlled traffic light at the road junction without any intervals by considering suitable inputs. (08 Marks)

OR

- 6 a. Explain with neat sketch five levels for software development for applications and services for IOT or M2M. (06 Marks)
 b. Explain the security requirements in an IOT reference architecture and usage of 5 functions components in the security group of functions. (05 Marks)
 c. With neat sketch explain the layered attacker model and possible attacks as the layers. (05 Marks)

Module-4

- 7 a. Explain the major challenges of wireless network. (08 Marks)
 b. Explain the characteristics of the following :
 i) MANETS (Mobile Ad-hoc Networks)
 ii) Field Buses and WSN. (08 Marks)

1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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OR

- 8 a. Explain single Hop network, Multihop network. (06 Marks)
b. Explain the design principles for WSN^S. (08 Marks)
c. Explain WNS Tunnelling. (02 Marks)

Module-5

- 9 a. Explain in detail S-MAC protocol. (06 Marks)
b. Explain LEACH protocol. (05 Marks)
c. Explain TRAMA protocol. (05 Marks)

OR

- 10 a. Explain in detail the address management in WSN^S. (08 Marks)
b. Explain the address assignment algorithm. (04 Marks)
c. Explain the properties required for various clustering in WSN^S. (04 Marks)
