



**SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES  
(AUTONOMOUS)**

**(INTERNET OF THINGS)**

**QUESTION BANK**

**IV - B.TECH / II - SEMESTER**

**REGULATION: R16**



**SITAMS**

**COMPILED BY  
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**DEPARTMENT : CSE**



# SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES

(Autonomous)

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK

Internet of Things

IV B. TECH II-SEMESTER

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### INTERNET OF THINGS

#### Course Educational Objectives:

- To understand the fundamentals of Internet of Things
- To learn about the basics of IOT protocols
- To Learn about Building state of the art architecture in IoT.
- To learn use of Devices, Gateways and Data Management in IoT.
- To build a small low cost embedded system using Raspberry Pi.
- To apply the concept of Internet of Things in the real world scenario.

#### UNIT I: Introduction to IoT

Introduction to Internet of Things –Definition and Characteristics of IoT, Physical Design of IoT- IoT Protocols, Logical Design of IoT - IoT communication models, IoT Communication APIs, IoT enabled Technologies- Wireless Sensor Networks, Cloud Computing, Communication protocols, Embedded Systems.

#### UNIT II: IoT and M2M

The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, A use case example, Differing Characteristics. **A Market Perspective**– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT

#### UNIT III: IoT Architecture

M2M high- IETF architecture for IoT - OGC architecture - IoT reference model - Domain model - information model - functional model - communication model - IoT reference architecture.

#### UNIT IV: M2M and IoT Technology Fundamentals

Devices and gateways, Local and wide area networking, Data management, Business processes in IoT, Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management.

#### UNIT V: Building IoT with Arduino & Raspberry Pi

Building IOT with Arduino- Building IOT with RASPBERRY PI- IoT Systems - Logical Design using Python – IoT Physical Devices & Endpoints - IoT Device -Building blocks - Pi - Raspberry Pi Interfaces - **Case study:** Smart Home & Smart Industry.

#### Course Outcomes:

**Upon completion of this course, the students should be able to:**

- ✓ Analyze various protocols for IoT
- ✓ Building state of the art architecture in IoT.
- ✓ Design a portable IoT using Raspberry Pi
- ✓ Use of Devices, Gateways and Data Management in IoT.
- ✓ Deploy an IoT application and connect to the cloud.
- ✓ Analyze applications of IoT in real time scenario.



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## Text Book:

1. ArshdeepBahga, Vijay Madiseti, “Internet of Things – A hands-on approach”, Universities Press, 2015
2. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, “From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”, 1st Edition, Academic Press, 2014.

## References:

1. Vijay Madiseti and ArshdeepBahga, “Internet of Things (A Hands-on-Approach)”, 1stEdition, VPT, 2014.
2. Francis daCosta, “Rethinking the Internet of Things: A Scalable Approach to Connecting Everything”, 1st Edition, Apress Publications, 2013
3. Bernd Scholz-Reiter, Florian Michahelles, “Architecting the Internet of Things”, ISBN 978- 3842-19156-5, Springer.
4. Olivier Hersent, David Boswarthick, Omar Elloumi, “The Internet of Things” Key Applications and Protocols, ISBN 978-1-119-99435-0, Wiley Publications.
5. The Internet of Things in the Cloud: A Middleware Perspective - Honbo Zhou – CRC Press – 2012.



# SITAMS



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QUESTION BANK

Internet of Things

## QUESTION BANK

Question No.	Questions	PO Attainment
<b>UNIT – 1: INTRODUCTION TO IOT</b>		
<b>PART-A (Two Marks Questions)</b>		
1	List out the Features of IoT.	PO1
2	State the characteristics of IoT.	PO1
3	List out the interfaces used in IoT?	PO1
4	Define data and information.	PO1,PO5
5	Build the physical design of IoT.	PO1,PO5
6	Define Wireless Sensor Networks.	PO1,PO5
7	Determine the basic operations in IoT.	PO1,PO5
8	List out various protocol used in Application layer.	PO1
9	Compare TCP and UDP.	PO1
10	Discuss Cloud computing.	PO1
11	Differentiate between Logical and physical design of IoT.	PO1
12	Tabulate various protocols used in Link layer of IoT.	PO1
13	Define IoT.	PO1
14	Define Actuators.	PO1,PO5
15	Differentiate between data and information in IoT.	PO1,PO5
16	Recall the advantages & disadvantages of IoT.	PO1,PO5
17	List out the I/O interfaces used in IoT.	PO1,PO5
18	Show the protocols used in Transport layer of IoT.	PO1,PO5
19	Use of Embedded systems in IoT.	PO1,PO5
20	State communication protocols.	PO1,PO5
<b>PART-B (Ten Marks Questions)</b>		
1	Define IoT. Identify and explain in detail about IoT	PO1, PO2
2	Explain the physical and logical design of IoT in detail.	PO1, PO2, PO5
3	Summarize the various IoT enabled technologies	PO1, PO2, PO5
4	Demonstrate the IOT Components with neat diagram.	PO1, PO2, PO5
5	Define IoT. Summarize the various applications of IoT.	PO1, PO2, PO5
6	Describe the characteristics and physical design of IoT.	PO1, PO2, PO5
7	Formulate the logical design of IoT with explanation.	PO1, PO2, PO5
8	Illustrate the various IoT communication APIs	PO1, PO2, PO5
9	Discuss about IoT communication model.	PO1, PO2, PO5
10	Design the protocol layer of IoT and explain various protocols used in each layer.	PO1, PO2, PO5



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Question No.	Questions	PO Attainment
<b>UNIT – 2: IOT AND M2M</b>		
<b>PART-A (Two Marks Questions)</b>		
1	Examine whether M2M and IoT are same?	PO1,PO3
2	Define M2M.	PO1
3	Differentiate between IoT and M2M.	PO1
4	Justify the reasons for using M2M and IoT.	PO1
5	Define M2M Communication.	PO1
6	Summarize the advantages of M2M communication.	PO1
7	List out the disadvantages of M2M communication.	PO1
8	Tell the key application areas of M2M communication.	PO1
9	Discuss the characterize of M2M.	PO1
10	Design Global value Chains.	PO1
11	Define GVC.	PO1
12	Identify the process of M2M value chains.	PO1
13	Label the process of IoT value chains.	PO1
14	Build I-GVC.	PO1, PO2
15	Define data factory.	PO1
16	Name the Inputs of I-GVC.	PO1, PO2
17	List out the two categories of Information Product.	PO1
18	Show the input of value chain.	PO1
19	List out the output of value chain.	PO1
20	Describe the barriers and concerns of IoT	PO1
<b>PART-B (Ten Marks Questions)</b>		
1	Define I-GVC. Generate and explain the structure of I-GVC.	PO1, PO2, PO3
2	Define IoT and M2M. State the Characteristics of IoT and M2M and Illustrate the difference between IoT and M2M.	PO1, PO2,
3	State and explain about M2M communication with example.	PO1, PO2, PO3
4	Explain various trends in Information and Communication Technologies.	PO1, PO2, PO3
5	Discuss the global context of M2M towards IoT.	PO1, PO2, PO3
6	Describe a use case example of M2M and IoT approach.	PO1, PO2, PO3
7	Discuss the following (i). M2M value chains (ii). IoT value chains	PO1, PO2, PO3



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Question No.	Questions	PO Attainment
<b>UNIT – 3: IOT ARCHITECTURE</b>		
<b>PART-A (Two Marks Questions)</b>		
1	Define IETF. And OGC	PO1
2	Illustrate the various primitives of M2M communication.	PO1
3	List out the major objectives of high level ETSI architecture.	PO1
4	Summarize the layers of IETF architecture of IoT.	PO1
5	Classify the perception layer in IoT.	PO1
6	Formulate Network and application layer.	PO1
7	Compare object abstraction with data abstraction.	PO1
8	Analyze the application layer.	PO1
9	What is the purpose of business layer?	PO1
10	Show the requirements of OGC architecture.	PO1,PO2
11	Differentiate sensor observation and planning services.	PO1, PO2
12	What do you understand by incident management information sharing?	PO1
13	Define Domain model.	PO1
14	Tell the use of information model.	PO1
15	List out the features of function model.	PO1
16	Define Communication model.	PO1
17	Name the challenges of OGC architecture model.	PO1
18	Illustrate the different types of communication model.	PO1
19	Analyze the device to cloud communication.	PO1
20	Name the features of IoT reference model.	PO1, PO2
<b>PART-B (Ten Marks Questions)</b>		
1	Design a neat sketch, discuss the M2M high-level ETSI architecture	PO1, PO2, PO5
2	Write a detailed note on IETF architecture for IoT.	PO1, PO2, PO5
3	Explain the OGC architecture in detail.  (i). Analyze the OGC requirements baseline for geospatial interoperability  ii). Explain the OGC sensor things API.	PO1, PO2, PO5
4	Describe in detail about the IoT reference model	PO1, PO2, PO5
5	Examine the Domain model in IoT.	PO1, PO2, PO5
6	Demonstrate in detail about specification of domain model.	PO1, PO2, PO5
7	Explain how Information is shared between the devices through IoT.	PO1, PO2, PO5
8	Describe in detail about Function models.	PO1, PO2, PO5
9	What are basics should be considered in function modeling in detail	PO1, PO2, PO5
10	Discuss in detail about the Aggregation/bus layer.	PO1, PO2, PO5



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Question No.	Questions	PO Attainment
<b>UNIT – 4: M2M AND IOT TECHNOLOGY FUNDAMENTALS</b>		
<b>PART-A (Two Marks Questions)</b>		
1	List out the properties to characterize the devices.	PO1
2	State the function of gateway.	PO1
3	Name the two groups of devices.	PO1
4	Give the deployment scenarios for Home alarms.	PO1, PO2
5	Summarize the role of Data Management.	PO1, PO2
6	Explain Device Management.	PO1, PO2
7	List out the three different functions of Gateways as firewall.	PO1, PO2
8	What is meant by node?	PO1, PO2
9	What is meant by Wide Area Network?	PO1
10	State the function of Data Acquisition.	PO1
11	Explain the function of Data Validation.	PO1
12	Identify the purpose of Data Preprocessing.	PO1
13	Define cloud computing.	PO1
14	List out the four V's in Big Data?	PO1
15	What is meant by Power Line Communication?	PO1
16	Define Spatial Data.	PO1
17	What is meant by predictive analysis?	PO1
18	Define clustering.	PO1
19	Summarize the function of Action Prediction model.	PO1
20	When the data is called as Week Type Data?	PO1, PO2
<b>PART-B (Ten Marks Questions)</b>		
1	Explain in detail about the Devices and Gateways.	PO1, PO2, PO5
2	What is the need of Network? And Explain in detail the LAN and WAN.	PO1, PO2, PO5
3	Explain in detail about the Data Management.	PO1, PO2, PO5
4	Explain the Business process in IOT.	PO1, PO2, PO5
5	Define cloud computing? And explain the various services provided by the cloud.	PO1, PO2, PO5
6	Sketch the Analytical architecture and explain in detail.	PO1, PO2, PO5
7	List out the various phases of CRISP-DM model and explain each with diagram.	PO1, PO2, PO3
8	Draw the architecture of knowledge management and explain.	PO1, PO2, PO3



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Question No.	Questions	PO Attainment
<b>UNIT – 5: BUILDING IOT WITH ARDUINO AND RASPBERRY PI</b>		
<b><u>PART-A (Two Marks Questions)</u></b>		
1	Analyze the features of Raspberry PI.	PO1, PO2
2	Define Raspberry PI.	PO1, PO2
3	Examine how the system on chip.	PO1, PO2
4	Summarize the benefits of SoC.	PO1, PO2
5	List out the steps used in internet gateway device.	PO1
6	Justify the significant of IoT systems.	PO1, PO2
7	Define Logical design using python.	PO1
8	Analyze the IoT physical devices and Endpoints.	PO1
9	Illustrate the building blocks of IoT device.	PO1
10	Name any four services offered by Raspberry Pi.	PO1
11	Justify how a linux Os is useful in IoT.	PO1
12	Differentiate Raspberry with Arduino.	PO1
13	What are the interfaces in Raspberry?	PO1
14	Name the different IoT platforms.	PO1
15	Analyze how programming raspberry pi works.	PO1
16	Define Arduino.	PO1
17	Generalize as to how Arduino works.	PO1
18	What is the purpose of actuators in IoT?	PO1, PO2
19	Name the Need For sensors in IoT.	PO1
20	Demonstrate Event –driven industrial IoT systems?	PO1
<b><u>PART-B (Ten Marks Questions)</u></b>		
1	Describe the relative strength and limitation of Building IOT with RASPBERRY PI	PO1, PO2, PO5
2	List the features in IoT systems	PO1, PO2, PO5
3	Describe Logical design using python in detail.	PO1, PO2, PO5
4	Summarize the IoT physical Devices in detail.	PO1, PO2, PO5
5	Discuss on Endpoints in IoT.	PO1, PO2, PO5
6	Draw and explain the building blocks of IoT device	PO1, PO2, PO5
7	Explain the concepts involved in Raspberry Pi.	PO1, PO2, PO5
8	Discuss in detail about Arduino with neat sketch.	PO1, PO2, PO5
9	Construct the Design of Smart home with Raspberry Pi and other hardware devices with neat sketch.	PO1, PO2, PO5
10	Formulate the significant use of Raspberry Pi in Smart cities and Industrial appliances.	PO1, PO2, PO5

\*\*\*ALL THE BEST\*\*\*