



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
QUESTION BANK

Programme:	B.E	Department:	Computer Science and Engineering
Academic Year:	2023-2024	Year/Sem/Sec :	III / VI / I & II
Course Code:	191CS63	Course Name:	Internet of Things
Course Tutor:	Mr.P.Gopalsamy AP/CSE, Mr.S.Balaganesh AP/CSE		

UNIT-I INTRODUCTION TO IoT

PART-A (2 Marks)			
S.No	Questions	COs	BT
1.	Define IoT	CO1	K1
2.	Describe the characteristics of IoT	CO1	K2
3.	Mention the applications of IoT	CO1	K1
4.	Write down the differences between Rest API & Web Socket API.	CO1	K2
5.	Define an internet protocol and compare IPV4 and IPV6.	CO1	K1
6.	Compare Transmission protocol and user data gram protocol with diagram.	CO1	K2
7.	List out the various applications of IoT.	CO1	K1
8.	List the two main types of components in an IoT system.	CO1	K1
9.	Compare physical design and logical design in terms of their importance in IoT architecture	CO1	K2
10.	Define what an IoT deployment template is.	CO1	K1
11.	Give an example of how a deployment template might simplify setting up a smart home system.	CO1	K1
12.	Identify two domains where IoT is commonly used.	CO1	K3
13.	Compare and contrast IoT and M2M communication in terms of data handling.	CO1	K2
14.	Name one IoT platform and describe its primary use.	CO1	K1
PART B (16 Marks)			
1.	Illustrate the generic block diagram of an IoT device and explain it briefly.	CO1	K2
2.	With the help of neat diagrams, describe the levels of IoT with an example each.	CO1	K2
3.	With a neat sketch, explain the request-response communication model of IoT.	CO1	K2
4.	With a neat sketch, explain the push-pull communication model of IoT.	CO1	K2
5.	Summarize the relationship between IoT and M2M technologies.	CO1	K2

6.	Demonstrate how IoT can be used in the healthcare domain to improve patient care.	CO1	K2
7.	Describe one enabling technology used in IoT and its significance.	CO1	K2
8.	Assess how cloud computing impacts the functionality of IoT systems.	CO1	K5
9.	Explain the role of physical components in an IoT setup.	CO1	K2
10.	Illustrate the difference between physical and logical design in IoT.	CO1	K2

UNIT-II IoT ARCHITECTURES

PART-A (2 Marks)			
S.No	Questions	COs	BT
1.	What are the characteristics of M2M network?	CO2	K1
2.	Mention advantages and Disadvantages of M2M communication system.	CO2	K1
3.	Differences between Machines in M2M and Things in IOT?	CO2	K2
4.	Explain the importance of M2M gateway in a Network.	CO2	K2
5.	Tell about OGC Sensor Web Enablement functionalities.	CO2	K1
6.	What are the differences between Machines in M2M and Things in IoT?	CO2	K1
7.	Name two key components of the M2M high-level ETSI architecture	CO2	K1
8.	Explain the main purpose of the ETSI M2M architecture in IoT systems.	CO2	K2
9.	Describe one core feature of the IETF architecture for IoT	CO2	K2
10.	How does the IETF architecture facilitate device interoperability in IoT networks?	CO2	K1
11.	What does OGC stand for, and what is its primary focus in IoT	CO2	K1
12.	List two layers of the IoT Reference Model.	CO2	K1
13.	What is the role of a Domain Model in IoT architecture?"	CO2	K1
14.	Give an example of how a Domain Model might simplify IoT system design	CO2	K1
15.	Define what an Information Model is in the context of IoT.	CO2	K1
PART B (16 Marks)			
1.	Describe the following steps involved in IoT system design methodology: (i) Purpose & Requirements Specification (ii) Process Specification	CO2	K2
2.	Define domain model specification & draw its structure in IoT system Design.	CO2	K1
3.	b) Describe the Information Model specification in IoT system Design.	CO2	K2
4.	Describe the following steps involved in IoT system design methodology: (i) Service Specifications (ii) Functional view specifications	CO2	K2
5.	Explain the main purpose of the ETSI M2M architecture in IoT systems.	CO2	K2
6.	Explain the significance of OGC architecture in spatial data handling for IoT applications.	CO2	K2
7.	Briefly describe the purpose of the IoT Reference Model in system design.	CO2	K2

8.	Explain how an Information Model contributes to data organization in IoT systems.	CO2	K2
9.	Illustrate how a Communication Model impacts data transmission between IoT devices.	CO2	K2

UNIT-III IoT PROTOCOLS

PART-A (2 Marks)			
S.No	Questions	COs	BT
1.	What is the goal of protocol standardization efforts in IoT?	CO3	K1
2.	Why is protocol standardization crucial for IoT interoperability?	CO3	K1
3.	How do M2M protocols differ from WSN protocols in terms of functionality?	CO3	K1
4.	What does SCADA stand for, and where is it typically used?	CO3	K1
5.	What is the purpose of unified data standards in IoT?	CO3	K2
6.	How do unified data standards simplify data exchange between different IoT systems?	CO3	K1
7.	Name two common protocols used in IoT communication.	CO3	K1
8.	What type of networks does IEEE 802.15.4 support?	CO3	K1
9.	What is BACNet used for in building automation?	CO3	K1
10.	What type of communication does the Modbus protocol facilitate?	CO3	K1
11.	Why is Modbus widely used in industrial settings?	CO3	K1
12.	What is the primary function of the network layer in IoT architecture?	CO3	K1
13.	What does 6LoWPAN stand for?	CO3	K1
14.	What is CoAP designed for in IoT systems?	CO3	K1
15.	Why is security a major concern in IoT deployments?	CO3	K1
PART B (16 Marks)			
1.	Identify a scenario where a WSN protocol would be more appropriate than an M2M protocol.	CO3	K3
2.	Explain the role of RFID protocols in inventory management	CO3	K2
3.	Explain the importance of communication protocols in an IoT ecosystem.	CO3	K2
4.	Discuss one advantage of using BACNet in smart building applications	CO3	K3
5.	Explain how the network layer manages data routing in IoT systems.	CO3	K2
6.	Describe one benefit of using 6LoWPAN in IoT networks.	CO3	K2
7.	Identify one security measure that can protect IoT networks from attacks.	CO3	K3

UNIT-IV BUILDING IoT USING RASPBERRY PI AND ARDUINO

PART-A (2 Marks)			
S.No	Questions	Cos	BT
1.	What is the purpose of using a Raspberry Pi in IoT projects?	CO4	K1
2.	Why is Python commonly used for logical design in IoT systems?	CO4	K1
3.	Give an example of a task in an IoT system that can be automated using Python.	CO4	K1
4.	Name two types of physical devices commonly used in IoT systems.	CO4	K1
5.	How does a microcontroller serve as a building block in an IoT device?	CO4	K1
6.	List two features of the Raspberry Pi board.	CO4	K1
7.	What makes the Raspberry Pi suitable for prototyping IoT applications?	CO4	K1
8.	What operating system is commonly used on a Raspberry Pi for IoT projects?	CO4	K1
9.	Name two interfaces available on the Raspberry Pi for connecting external devices.	CO4	K1
10.	How does the GPIO interface support IoT applications?	CO4	K1
11.	Why is Python a preferred language for programming the Raspberry Pi?	CO4	K1
12.	Name one alternative to Raspberry Pi for building IoT systems.	CO4	K1
13.	Compare Raspberry Pi and Arduino in terms of their suitability for IoT projects.	CO4	K2
14.	What is Arduino primarily used for in the context of IoT?	CO4	K1
PART B (16 Marks)			
1.	Identify a basic IoT project that can be developed using a Raspberry Pi.	CO4	K3
2.	Describe one key building block of an IoT device and its function.	CO4	K2
3.	Explain one advantage of using Linux on a Raspberry Pi in an IoT setup.	CO4	K2
4.	Describe one difference between Arduino and Raspberry Pi.	CO4	K2

UNIT-V CASE STUDIES AND PRACTICES

PART-A (2 Marks)			
S.No	Questions	Cos	BT
1.	List two common design constraints faced in developing IoT systems.	CO5	K1
2.	How does IoT enhance asset management in industrial applications?	CO5	K1
3.	Provide an example of how IoT is used in smart grid systems for efficient energy distribution.	CO6	K1
4.	What is participatory sensing in the context of IoT?	CO6	K1
5.	Why is data analytics important for IoT applications?	CO5	K1
6.	How does real-time data analytics improve industrial automation?	CO5	K1
7.	Name one software tool commonly used for managing IoT devices.	CO6	K1

8.	What is the purpose of using management tools in an IoT environment?	CO6	K1
9.	List two types of cloud storage models used in IoT.	CO5	K1
10.	What is one benefit of using cloud platforms for IoT data storage?	CO5	K1
PART B (16 Marks)			
1.	Explain why power consumption is a critical constraint in IoT device design.	CO6	K2
2.	Describe one way participatory sensing can be used to improve smart city infrastructure.	CO6	K2
3.	How do communication APIs facilitate data exchange between IoT devices and cloud services?"	CO6	K1
4.	Explain how cloud computing helps in scaling IoT applications."	CO5	K2
5.	How does AWS IoT Core support the management of IoT devices?	CO5	K1

Note: K1-Remembering, K2-Understanding, K3-Applying, K4-Analyzing, K5-Evaluating, K6-Creating

CO1:	Define the right sensors and components for various IoT systems.
CO2:	Compare the various architectures of IoT.
CO3:	Explain the various protocol standardization efforts and IoT Protocols.
CO4:	Recall the basic concepts of Arduino and Raspberry Pi.
CO5:	Relate the role of big data, cloud computing and data analytics in a typical IoT system.
CO6:	Develop simple applications in IoT using Arduino and Raspberry Pi.

Prepared by
(Mr.P.Gopalsamy AP/CSE)
(Mr.S.Balaganesh AP/CSE)

Approved by
HOD/CSE