SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR

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QUESTION BANK (DESCRIPTIVE)

Subject with Code: INTRODUCTION TO IoT (19EC0450) **Course & Branch**: B.Tech :EEE,CSE,CSIT

Year &Sem: III-B.Tech & I-Sem **Regulation:** R19

UNIT –I
IOT INTRODUCTION & CONCEPTS

1	a) Describe the characteristics of IoT.	[L2] CO1]	**[6M]**
	b) Explain the role of things in IoT.	[L2] CO1]	**[6M]**
2	a) Mention the applications of IoT.	[L1][CO1]	**[6M]**
	b) Explain various link layer protocols of IoT.	[L1][CO1]	**[6M]**
3	With the help of neat diagrams, describe the levels of IoT with an example each.	[L2] CO1]	**[12M]**
4	a) Describe an example of an IoT system in which information and knowledge are inferred from the data.	[L2] CO1]	**[6M]**
	b) What are the protocols associated with network/internet layer of IoT? Explain them in detail.	[L1] CO1]	**[6M]**
5	a) With a neat sketch, explain the request-response communication model of IoT.	[L2] CO1]	**[6M]**
	b) Illustrate the generic block diagram of an IoT device and explain it briefly.	[L2] CO1]	**[6M]**
6	a) Compare the protocols associated with transport layer of IoT	[L2] CO1]	**[6M]**
	b) With a neat sketch, explain the push-pull communication model of IoT.	[L2] CO1]	**[6M]**
7	a) Describe various functional blocks of IoT.	[L2] CO1]	**[6M]**
	b) Write down the differences between Rest API & Web Socket API.	[L2] CO1]	**[6M]**
8	a) Explain the major services used in cloud computing technology.	[L2] CO1]	**[6M]**
	b) Explain the role of Big data analysis in IoT and Define its Characteristics.	[L2] CO1]	**[6M]**
9	a) Discuss the role of communication protocols and embedded systems in IoT.	[L2] CO1]	**[6M]**
	b) Describe how wireless sensor networks became one of the enabling technologies of IoT.	[L2] CO1]	**[6M]**
10	a) Define an internet protocol and compare IPV4 and IPV6.	[L2] CO1]	**[6M]**
	b) Compare Transmission protocol and user data gram protocol with diagram.	[L2] CO1]	**[6M]**

UNIT –II
DOMAIN SPECIFIC IOTS

1	a) Define how the IoT technology can be implemented in smart lightening and intrusion detection systems.	[L2][CO2]	**[6M]**
	b) Describe how the IoT technology can be implemented in smart appliances and smoke/gas detection systems.	[L2][CO2]	**[6M]**
2	Explain the implementation of IoT technology in following areas: (i) Smart Parking (ii)Smart Lightening (iii) Emergency response (iv) smart roads in smart cities	[L2][CO2]	**[12M]**
3	Explain how IoT technology can used in the following application areas: (i) Structural health monitoring (ii) Surveillance (iii) Emergency response (iv) Weather monitoring	[L2][CO2]	**[12M]**
4	Describe how the environment can be more protected with the help of IoT technology in the following categories: (i) Air pollution monitoring (ii) Noise pollution monitoring (iii) Forest fire detection (iv) River flood detection	[L3][CO2]	**[12M]**
5	Describe the implementation of IoT technology into distributed energy systems to optimize the efficiency of energy infrastructure and reduce wastage in the following categories: (i) Smart grids (ii) Renewable energy systems (iii) Prognostics.	[L3][CO2]	**[12M]**
6	Explain the necessity of adopting IoT technology for a growing need to increase customer loyalty and deliver the best in-store experience by retail sector in the following sectors: (i) Inventory management (ii) Smart payments (iii) Smart vending machines	[L2][CO2]	**[12M]**
7	With the help of following sectors explain how IoT technology is impacting on the end-to-end value chain in the logistics sector : (i)Route generation & scheduling (ii) Fleet tracking (iii) Shipment monitoring (iv) Remote vehicle diagnostics	[L2][CO2]	**[12M]**
8	Explain how IoT technology used to enable the agricultural industry to increase operational efficiency, lower costs, reduce waste, and improve the quality of their yield.	[L2][CO3]	**[6M]**
9	Explain how the IoT technology is impacting the healthcare sector and changing our everyday lifestyle with the following examples: (i) Health & Fitness monitoring (ii) Wearable electronics	[L3][CO2]	**[12M]**
10	a) List out the various applications of IoT.	[L2][CO3]	**[6M]**
	b) Explain one example of structural health monitoring application.	[L2][CO3]	**[6M]**

UNIT –III
IOT AND M2M

1	With the help of neat diagrams, explain the M2M system architecture.	[L2][CO3]	**[12M]**
2	a) Mention the communication protocols used for M2M local area networks.	[L2][CO3]	**[6M]**
	b) Explain the differences between Machines in M2M and Things in IOT?	[L2][CO3]	**[6M]**
3	a) Explain the importance of M2M gateway in a Network.	[L3][CO3]	**[6M]**
	b) Define a data Network & what are the limitations of conventional Network .	[L2][CO3]	**[6M]**
4	a) Draw the structure of Software defined networking for IoT & Explain it	[L3][CO3]	**[6M]**
	b) Explain the Key elements of Software defined network for IoT.	[L3][CO3]	**[6M]**
5	a) Describe the structure of Network function Virtualization for IoT.	[L2][CO3]	**[6M]**
	b) Explain the Key elements of Network function Virtualization for IoT.	[L2][CO3]	**[6M]**
6	Describe the following steps involved in IoT system design methodology: (i) Purpose & Requirements Specification (ii) Process Specification	[L2][CO3]	**[12M]**
7	a) Define domain model specification & draw its structure in IoT system Design.	[L2][CO3]	**[6M]**
	b) Describe the Information Model specification in IoT system Design.	[L2][CO3]	**[6M]**
8	Describe the following steps involved in IoT system design methodology: (i) Service Specifications (ii) Functional view specifications	[L2][CO3]	**[12M]**
9	a) Explain the characteristics of Python programming language.	[L1][CO3]	**[6M]**
	b) Explain Benefits' of python programming language.	[L1][CO3]	**[6M]**
10	a) Mention advantages and Disadvantages of M2M communication system.	[L2][CO3]	**[6M]**
	b) What are the characteristics of M2M network?	[L2][CO3]	**[6M]**

UNIT –IV
IOT PHYSICAL DEVICES & ENDPOINTS

1	a) Define an IoT device & give some examples.	[L2][CO4]	**[6M]**
	b) Explain the GPIO pins of Raspberry Pi device with neat diagram.	[L2][CO4]	**[6M]**
2	a) With the help of neat diagram explain the basic building blocks of IoT device.	[L4][CO4]	**[6M]**
	b) Justify how Raspberry Pi is different from a desktop computer.	[L4][CO4]	**[6M]**
3	a) Describe various features of a Raspberry Pi device.	[L2][CO4]	**[6M]**
	b) List out various versions of raspberry pi devices till date.	[L2][CO4]	**[6M]**
4	a) What is a module in python? Explain with an example	[L5][CO4]	**[6M]**
	b) Explain in brief about the OOP concepts	[L5][CO4]	**[6M]**
5	a) Mention the flavors of Linux OS supported by Raspberry pi device.	[L2][CO4]	**[6M]**
	b) List the various frequently used commands during operation of Linux OS.	[L2][CO4]	**[6M]**
6	a) Write a short note on various raspberry pi interfaces used for data transfer.	[L2][CO4]	**[6M]**
	b) List out various single board computers which are alternatives to Raspberry pi.	[L2][CO4]	**[6M]**
7	a) What is the use of GPIO pins in an IoT device?	[L6][CO4]	**[6M]**
	b) Illustrate how to interface a LED to raspberry pi and write a program to blink	[L6][CO4]	**[6M]**
8	Design an automatic refrigerator light system with LED, switch & raspberry pi and write a python program to support the working of that design.	[L6][CO4]	**[12M]**
9	a) What is the use of SPI and I2C interfaces on raspberry pi?	[L2][CO4]	**[6M]**
	b) Illustrate how to interface a switch to raspberry pi.	[L2][CO4]	**[6M]**
10	a) Illustrate how to interface a Light sensor (LDR) with raspberry pi.	[L2][CO4]	**[6M]**
	b) Design an automatic lightening system with LDR, Light and raspberry pi and write a python program to support the working of that design.	[L2][CO4]	**[6M]**

UNIT –V
CASE STUDIES ILLUSTRATING IOT DESIGN

1	a) Design a smart home automation system using IoT With mode REST service	[L5][CO5]	**[6M]**
	b) Explain service specification for home automation system in state service	[L4][CO5]	**[6M]**
2	a) Define service specifications for the Intrusion Detection system	[L2][CO5]	**[6M]**
	b) Define Domain model specifications for the Intrusion Detection system	[L2][CO5]	**[6M]**
3	a) Define Process specifications for the Intrusion Detection system	[L2][CO5]	**[6M]**
	b) Define Information model specifications for the Intrusion Detection system	[L4][CO5]	**[6M]**
4	a) Implement the analytics component for the forest fire detection system.	[L4][CO5]	**[6M]**
	b) Write a python code for IoT printer to Raspberry Pi	[L4][CO5]	**[6M]**
5	a) Explain functional and operational view specifications for Home Intrusion detection system?	[L4][CO5]	**[6M]**
	b) Write a python program for room and door REST services using serializes.	[L4][CO5]	**[6M]**
6	a) Explain the purpose of smart parking in cities?	[L2][CO5]	**[6M]**
	b) Define process specification & domain model for smart parking IoT system	[L4][CO5]	**[6M]**
7	a) Write a python program for REST service and smart parking using Django	[L3][CO5]	**[6M]**
	b) Define Information model and controller service for smart parking IoT system	[L4][CO5]	**[6M]**
8	a) Design a weather monitoring IoT system using REST based?	[L4][CO5]	**[6M]**
	b) Design a weather monitoring IoT system using Web Socket based?	[L3][CO5]	**[6M]**
9	a) Implement the air pollution monitoring system using the Web Socket approach	[L6][CO5]	**[6M]**
	b) Implementation of smart irrigation system	[L6][CO5]	**[6M]**
10	a) Design a smart lighting system using IoT device.	[L2][CO5]	**[6M]**
	b) Which sensors are used in weather monitoring system? Which IOT level is used for weather monitoring system?	[L2][CO5]	**[6M]**

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