Code No: **R204104I** **R20** **Set No. 1**

IV B.Tech I Semester Regular Examinations, January – 2024

INTERNET OF THINGS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT– I

1	a)	Define XaaS and explain its significance in the context of IoT.	[7]
	b)	Explain the unique security challenges in IoT and the potential risks associated with unsecured devices.	[7]
		(OR)	
2	a)	Discuss about Data Management in IoT.	[7]
	b)	Explain the concept of Cloud computing and its role in data management for IoT.	[7]

UNIT– II

3	a)	Differentiate between the ARM and Thumb instruction sets.	[7]
	b)	Illustratea scenario where selecting the appropriate instruction set is crucial for an IoT application.	[7]
		(OR)	
4	a)	Describe the basic instruction categories supported by Cortex-M0.	[7]
	b)	How is the instruction set optimized for IoT devices with limited resources?	[7]

UNIT– III

5		Detail the architecture of Bluetooth Low Energy, highlighting its key components.	[14]
		(OR)	
6	a)	Explain the role of programming APIs in IoT application development.	[7]
	b)	Describe about PSoC4 BLE architecture with a neat sketch.	[7]

UNIT– IV

7	a)	Explain the role of data processing in an IoT solution framework.	[7]
	b)	Discuss the significance of load balancing and resource allocation in scalable IoT solutions.	[7]
		(OR)	
8		Explain the key methods and protocols used for device authorization in IoT solutions and their implementation.	[14]

UNIT–V

9		Describe an IoT case study in the transportation sector, highlighting its impact on efficiency and safety.	[14]
		(OR)	
10	a)	Compare Cloud and Fog computing.	[7]
	b)	How does cloud computing play a crucial role in handling the massive data generated by IoT devices?	[7]

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Code No: **R204104I** **R20** **Set No. 2**

IV B.Tech I Semester Regular Examinations, January – 2024
INTERNET OF THINGS
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
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UNIT– I

1	a)	Differentiate M2M and IoT Technology.	[7]
	b)	Summarize in detail IoT data management and handling of business processes.	[7]
		(OR)	
2		Discuss the following in detail: i) Data Management. ii) Role of Cloud in IoT.	[14]

UNIT– II

3	a)	Explain the architecture of ARM Cortex-M0 processors and their role in IoT.	[7]
	b)	How does the Cortex-M0 processor's architecture support low-power IoT applications?	[7]
		(OR)	
4	a)	Describe the key features and capabilities of Arduino for IoT applications.	[7]
	b)	Discuss some typical use cases for Raspberry Pi in IoT applications.	[7]

UNIT– III

5	a)	Define the concept of sensing in IoT and provide examples of IoT sensors.	[7]
	b)	Describe the different types of I/O interfaces commonly used in IoT applications.	[7]
		(OR)	
6	a)	Explain the advantages and disadvantages of using ZigBee for IoT communication.	[7]
	b)	Compare the use of UDP and TCP in IoT applications.	[7]

UNIT– IV

7	a)	What is a solution framework in the context of IoT applications, and why is it important?	[7]
	b)	Explain the components and architecture of a typical IoT solution framework.	[7]
		(OR)	
8	a)	How is device integration achieved in IoT applications, and what challenges may arise in this process?	[7]
	b)	Describe some common protocols and standards used for device integration in IoT.	[7]

UNIT–V

9	a)	How is IoT technology applied in agriculture to enhance crop management and yield? Explain.	[7]
	b)	Explain the significance of Cloud Analytics in IoT applications.	[7]
		(OR)	
10		Discuss the importance of cloud computing in providing remote access and control of IoT devices.	[14]

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Code No: **R204104I** **R20** **Set No. 3**

IV B.Tech I Semester Regular Examinations, January – 2024

INTERNET OF THINGS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT– I

1	a)	Describe the simplified IoT Architecture.	[7]
	b)	Analyze in detail about Sensors, Actuators and Smart Objects	[7]
		(OR)	
2	a)	Describe the role of cloud computing in IoT applications.	[7]
	b)	Explain the unique security challenges in IoT and the potential risks associated with unsecured devices.	[7]

UNIT– II

3	a)	Explain the architecture and key characteristics of ARM Cortex-A processors.	[7]
	b)	How does a Cortex-A processor contribute to the computing power of an IoT device?	[7]
		(OR)	
4	a)	What distinguishes ARM Cortex-M class processors from other ARM architectures in the context of IoT?	[7]
	b)	Draw a block diagram of the Cortex-M0 processor highlighting its major components.	[7]

UNIT– III

5	a)	What are the key steps involved in IoT application development from concept to deployment?	[7]
	b)	Describe the MQTT protocol and its role in IoT communication.	[7]
		(OR)	
6	a)	Describe the BLE advertising and connection phases and their significance in IoT.	[7]
	b)	How is power efficiency achieved in BLE compared to classic Bluetooth?	[7]

UNIT– IV

7	a)	What is data acquisition and why is it a critical aspect of IoT solutions?	[7]
	b)	Describe the options for storing device data in IoT applications including local and cloud-based storage.	[7]
		(OR)	
8	a)	Explain how data analytics tools and techniques are applied to extract insights from IoT data?	[7]
	b)	Discuss the challenges associated with scaling up of IoT solutions.	[7]

UNIT–V

9		Explain an IoT case studying home automation, including smart devices and their benefits.	[14]
		(OR)	
10	a)	Define Cloud Analytics. Explain its significance in IoT.	[7]
	b)	Discuss the steps involved in connecting IoT devices to cloud platforms for data analysis.	[7]

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Code No: **R204104I** **R20** **Set No. 4**

IV B.Tech I Semester Regular Examinations, January – 2024

INTERNET OF THINGS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT– I

1	a)	Explain the Simplified IoT Architecture and basics of Networking.	[7]
	b)	Summarize the characteristics of IoT.	[7]
		(OR)	
2	a)	Differentiate IoT and M2M.	[7]
	b)	Explain the various functional blocks of IoT eco systems.	[7]

UNIT– II

3	a)	Briefly discuss about the elements of IoT Hardware.	[7]
	b)	How does the Raspberry Pi differ from Arduino in terms of hardware and functionality for IoT projects?	[7]
		(OR)	
4	a)	Explain the architecture of Arm Cortex-M0 Processor.	[7]
	b)	Describe the instruction set of Cortex-M0 Processor.	[7]

UNIT– III

5	a)	Discuss about the components within PSoC4 BLE and their functionalities.	[7]
	b)	Describe a practical IoT use case where PSoC4 BLE could be employed.	[7]
		(OR)	
6		Discuss about the following IoT communication protocols: i) Zigbee ii) TCP & UDP	[14]

UNIT– IV

7	a)	Explain the role of data processing in an IoT solution framework.	[7]
	b)	Describe the components and architecture of a typical IoT solution framework.	[7]
		(OR)	
8	a)	Describe the protocols and standards used for device integration in IoT.	[7]
	b)	Discuss the challenges in device integration in IoT applications.	[7]

UNIT–V

9	a)	Explain the differences between cloud computing and fog computing and their relevance to IoT.	[7]
	b)	Discuss some potential mini projects for learning IoT in the context of home automation.	[7]
		(OR)	
10		Explain an IoT case study related to healthcare, focusing on remote patient monitoring or healthcare device integration.	[14]

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