

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM

III B. Tech II Semester Regular/Supplementary Examinations November -2025

**IOT AND APPLICATIONS
(OPEN ELECTIVE-II)**

Time: 3 hours

Max. Marks: 70

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

		UNIT-I	
1.	a)	Define the Internet of Things (IoT) and explain its fundamental building blocks. What makes IoT different from traditional computing systems?	[7M]
	b)	Discuss the various security threats faced by IoT systems and explain the strategies used to mitigate these risks.	[7M]
		(OR)	
2.	a)	Explain the concept of Machine-to-Machine (M2M) communication and how it forms the foundation for IoT. Provide examples of real-world M2M applications.	[7M]
	b)	Analyze the role of business process integration in the IoT ecosystem. How does it enable automation and efficiency?	[7M]
		UNIT-II	
3.	a)	Describe the role and significance of ARM Cortex-M class processors in embedded IoT systems. Why are they suitable for constrained devices?	[7M]
	b)	Draw the block diagram of the ARM Cortex-M0 processor and explain the function of each block in detail.	[7M]
		(OR)	
4.	a)	Write short notes on the types and roles of embedded devices in IoT applications, such as sensors, microcontrollers, and transceivers.	[7M]
	b)	List and explain the important instructions in the Cortex-M0 instruction set, highlighting their utility in typical IoT tasks.	[7M]
		UNIT-III	
5.	a)	Describe various communication protocols used in IoT applications, including MQTT, CoAP, and ZigBee. Discuss their suitability based on application requirements.	[7M]
	b)	Compare and contrast the CoAP and MQTT protocols in terms of architecture, transport layer dependencies, and use cases.	[7M]
		(OR)	
6.	a)	Explain the architecture of PSoC4 BLE and its role in Bluetooth-enabled IoT applications. Include the core components and development environment.	[7M]
	b)	Write an Arduino program to read temperature sensor data and transmit it to a server using TCP protocol. Explain the steps involved.	[7M]
		UNIT-IV	
7.	a)	Explain how IoT systems acquire and store data on local servers. What are the design challenges in managing such storage infrastructures?	[7M]
	b)	Describe the process of data acquisition from various IoT devices. Include sensor interfacing, data filtering, and formatting in your answer.	[7M]

		(OR)	
8.	a)	Outline the steps to implement a secure authorization mechanism for IoT devices. How do access tokens and roles play a part?	[7M]
	b)	Discuss the key factors that affect successful integration of IoT data with cloud systems, including data volume, velocity, and format diversity.	[7M]
		<u>UNIT-V</u>	
9.	a)	Describe an IoT-based solution used in agriculture. Explain how it helps monitor environmental conditions and optimize resource usage.	[7M]
	b)	Explain the process and architecture of connecting an IoT device to a cloud platform for real-time monitoring and control.	[7M]
		(OR)	
10.	a)	Illustrate how cloud computing supports IoT-based transportation systems such as smart traffic management or vehicle tracking.	[7M]
	b)	List and explain major technical and operational challenges encountered while integrating IoT with cloud storage solutions.	[7M]
