

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

**Subject Code:3171108**

**Date:18-11-2025**

**Subject Name:Internet of Things**

**Time:10:30 AM TO 01:00 PM**

**Total Marks:70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		<b>Marks</b>
<b>Q.1</b>	(a) Differentiate between IoT and Machine-to-Machine (M2M) communication.	<b>03</b>
	(b) Highlight the key characteristics of IoT.	<b>04</b>
	(c) Discuss the architecture of IoT using a detailed block diagram.	<b>07</b>
<b>Q.2</b>	(a) Define IoT gateways and their function.	<b>03</b>
	(b) Discuss an architecture of Raspberry Pi.	<b>04</b>
	(c) Describe how sensors and actuators interact in an IoT environment to achieve automation.	<b>07</b>
<b>OR</b>		
	(c) Explain the programming and implementation of a typical IoT system using NodeMCU.	<b>07</b>
<b>Q.3</b>	(a) What is the Message Queue Telemetry Transport (MQTT) protocol in IoT?	<b>03</b>
	(b) What is an actuator in IoT, and how does it differ from a sensor?	<b>04</b>
	(c) Discuss various levels of IoT.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) What is the purpose of the Constrained Application Protocol (CoAP) in IoT?	<b>03</b>
	(b) Describe the functionality of the any one Layer in IoT communication.	<b>04</b>
	(c) Describe the architecture of the Web Socket protocol in IoT, including its benefits and drawbacks.	<b>07</b>
<b>Q.4</b>	(a) Define Hypertext Transfer Protocol (HTTP) in the context of IoT.	<b>03</b>
	(b) What are link layer protocols in IoT, and how do they contribute to IoT communication?	<b>04</b>
	(c) Explain the security challenges in IoT protocols and how they can be mitigated.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) How does CoAP ensure efficiency in constrained IoT devices?	<b>03</b>
	(b) Discuss the various communication models used in IoT.	<b>04</b>
	(c) Draw and Explain block diagram of IoT Security.	<b>07</b>

- Q.5** (a) What is Key Management in IoT security? **03**  
(b) How does update management help in maintaining the security of IoT devices? **04**  
(c) Explain the role of IoT in agriculture, including real-time monitoring and precision farming. **07**

**OR**

- Q.5** (a) What is the significance of IoT in smart cities? **03**  
(b) How is IoT applied in the transportation industry? **04**  
(c) Explain the role of IoT in military defense system. **07**

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