

Enrollment No./Seat No.:

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**Bachelor of Engineering - SEMESTER - VI EXAMINATION - WINTER 2025**

**Subject Code: 3160716**

**Date: 19-11-2025**

**Subject Name: IOT and applications**

**Time: 02:30 PM TO 05:00 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 (a)</b> Explain the role of "things" in IoT	<b>03</b>
<b>(b)</b> Explain the significance of AI/ML in IoT.	<b>04</b>
<b>(c)</b> With neat diagrammatic representation, explain IoT Stack with appropriate examples for each layer.	<b>07</b>
<b>Q.2 (a)</b> What are the different categories of the Sensors?	<b>03</b>
<b>(b)</b> Mention clearly the procedure to interface the Ultrasonic sensor with any microcontroller of your choice.	<b>04</b>
<b>(c)</b> What are the advantages of IoT in Health care sector? Discuss the role of IoT in Health Care Sector with proper example.	<b>07</b>
<b>OR</b>	
<b>(c)</b> What are the advantages of IoT in Agriculture sector? Discuss the role of IoT in Agriculture Sector with proper example.	<b>07</b>
<b>Q.3 (a)</b> Write short note on: Zigbee.	<b>03</b>
<b>(b)</b> Give the differences between M2M and IoT.	<b>04</b>
<b>(c)</b> Draw the BLE stack and explain its components.	<b>07</b>
<b>OR</b>	
<b>(a)</b> Explain the importance of URI in networking.	<b>03</b>
<b>(b)</b> How is IPv4 inferior to IPv6?	<b>04</b>
<b>(c)</b> Explain the importance of MQTT protocol with respect to IoT infrastructure	<b>07</b>
<b>Q.4 (a)</b> List the various Cloud deployment Models.	<b>03</b>
<b>(b)</b> What is fog computing? List the characteristics of fog computing.	<b>04</b>
<b>(c)</b> Explain case study of Adafruit cloud.	<b>07</b>
<b>OR</b>	
<b>(a)</b> What are the common threats to cloud storage?	<b>03</b>

- (b) What are the major security challenges in IoT compared to traditional networks? 04
- (c) Describe lightweight cryptography and why it is important for IoT devices? 07
- Q.5** (a) How can IoT improve warehouse management? 03
- (b) What is Arduino? Explain features of Arduino architecture. 04
- (c) Write arduino code to realize Traffic light controller using RED, GREEN & ORANGE LED. At the interval of 30 second, traffic lights should be turned on-off in a specific sequence. 07

**OR**

- (a) What type of IoT devices are commonly used in driver assistance systems? 03
- (b) Draw the block diagram of Raspberry Pi and explain components of Raspberry Pi in brief. 04
- (c) Write arduino code to interface Temperature sensor & LED with Arduino UNO board. If the temperature value is greater than 35 degree Celsius, LED should be turn on. 07

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