

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.**

	Marks
Q.1 (a) Explain the role of "things" in IoT	03
(b) Explain the significance of AI/ML in IoT.	04
(c) With neat diagrammatic representation, explain IoT Stack with appropriate examples for each layer.	07
Q.2 (a) What are the different categories of the Sensors?	03
(b) Mention clearly the procedure to interface the Ultrasonic sensor with any microcontroller of your choice.	04
(c) What are the advantages of IoT in Health care sector? Discuss the role of IoT in Health Care Sector with proper example.	07
OR	
(c) What are the advantages of IoT in Agriculture sector? Discuss the role of IoT in Agriculture Sector with proper example.	07
Q.3 (a) Write short note on: Zigbee.	03
(b) Give the differences between M2M and IoT.	04
(c) Draw the BLE stack and explain its components.	07
OR	
(a) Explain the importance of URI in networking.	03
(b) How is IPv4 inferior to IPv6?	04
(c) Explain the importance of MQTT protocol with respect to IoT infrastructure	07
Q.4 (a) List the various Cloud deployment Models.	03
(b) What is fog computing? List the characteristics of fog computing.	04
(c) Explain case study of Adafruit cloud.	07
OR	
(a) What are the common threats to cloud storage?	03

- (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**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3160716

Date:28-11-2024

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.

	MARKS
Q.1 (a) What is IoT ? List any five IoT applications.	03
(b) Explain enabling technologies in IoT.	04
(c) Draw and explain IOT architecture.	07
Q.2 (a) Draw and explain IPv6 Header	03
(b) Explain various levels of IoT.	04
(c) List out types of IoT protocols and explain any one in brief.	07
OR	
(c) Explain pinMode(), digitalRead() and digitalWrite () functions of Arduino.	07
Q.3 (a) Give difference between IPV4 and IPV6 transport protocol.	03
(b) What is Sensor ? List different types of Sensors used to develop IOT.	04
(c) Explain Security and Privacy in cloud with respect to IoT based application.	07
OR	
Q.3 (a) Explain CoAP. List the key features of CoAP.	03
(b) Explain limitation of cloud computing.	04
(c) List the characteristics of fog computing. Explain fog computing in detail.	07
Q.4 (a) Explain MQTT. List the key features of MQTT.	03
(b) Write Raspberry Pi code to change the brightness of LED.	04
(c) What is Arduino? Explain features of Arduino architecture.	07
OR	
Q.4 (a) What is PWM? Explain usage of PWM pins with Example.	03
(b) Write Raspberry Pi code to blink LED ON and OFF.	04
(c) Explain interfacing of LED with Raspberry Pi.	07
Q.5 (a) Explain various application of IoT in Smart City.	03
(b) Explain IoT security challenges.	04
(c) Draw and explain architecture of IoT security.	07
OR	
Q.5 (a) Explain various application of IoT in Samrt Home.	03
(b) Explain any one algorithm for IoT security.	04
(c) What are the security and privacy issues of IOT? Explain using suitable case scenario.	07

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023****Subject Code:3160716****Date:07-12-2023****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.

		MARKS
Q.1	(a) Define IOT. Also Write the merits and demerits of IOT.	03
	(b) Discuss smart health using IOT.	04
	(c) Explain the architecture of the IOT.	07
Q.2	(a) Which are the network and communication technologies can be used to implement an IOT application?	03
	(b) Explain IOT value chains.	04
	(c) For building an architecture of IOT explain main design principles and needed capabilities.	07
OR		
	(c) Which are hardware and software components of IOT? How do these components get synchronised in an IOT based application?	07
Q.3	(a) Explain IOT Domain Model.	03
	(b) What is cloud? What is the role of cloud platforms in IOT?	04
	(c) What is ARM? Explain special feature of ARM processor.	07
OR		
Q.3	(a) Differentiate between IPv4 and IPv6.	03
	(b) What are the security challenges of IOT?	04
	(c) List and explain cloud deployment models.	07
Q.4	(a) Differentiate between M2M and IOT.	03
	(b) Explain IPv4 header format with diagram.	04
	(c) Explain case study of Adafruit cloud.	07
OR		
Q.4	(a) What is fog computing? List the characteristics of fog computing.	03
	(b) Discuss various register set of 8051.	04
	(c) What is cloud analytics? Explain in brief future factory concepts.	07
Q.5	(a) What is Raspberry Pi and Li-Fi ?	03
	(b) Explain features of Arduino architecture.	04
	(c) What is CoAP and MQTT? List out the key features of CoAP.	07
OR		
Q.5	(a) What is man in the middle attack?	03
	(b) Explain application of IOT in water monitoring system.	04
	(c) What are the security and private issues of IOT? Explain using suitable case scenario.	07

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3160716****Date:15-12-2022****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.

	MARKS
Q.1 (a) Define IOT. Discuss advantages and disadvantages of IOT.	03
(b) Explain different characteristics of IOT.	04
(c) Draw and explain IOT architecture.	07
Q.2 (a) What is M2M and IOT?	03
(b) Explain sensor and microcontroller.	04
(c) Discuss levels of IOT.	07
OR	
(c) Discuss various applications of IOT.	07
Q.3 (a) What is and IOT messaging protocol?	03
(b) Give difference between MQTT and COAP protocols.	04
(c) List out types of IOT protocols and explain any one in brief.	07
OR	
Q.3 (a) Write short note on: Zigbee.	03
(b) Give difference between IPV4 and IPV6 transport protocol.	04
(c) What is BLE? Explain components of BLE.	07
Q.4 (a) Explain features of Arduino.	03
(b) Explain IOT challenges.	04
(c) Draw and explain Arduino architecture.	07
OR	
Q.4 (a) Explain cloud for IOT.	03
(b) Explain IOT for the retailing industry.	04
(c) Explain interfacing of LED with Raspberry Pi.	07
Q.5 (a) Explain web of things.	03
(b) Describe IOT security needs and issues.	04
(c) Explain security architecture in detail with diagram.	07
OR	
Q.5 (a) What are the challenges of IOT security?	03
(b) Explain Raspberry Pi interface.	04
(c) Draw the block diagram of Raspberry Pi and explain components of Raspberry Pi in brief.	07
