Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3173215   **Date:07-01-2023**
Subject Name:IOT and its applications
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.**

			MARKS
Q.1	**(a)**	Define IOT. Discuss its characteristics in brief.	**03**
	(b)	Draw IOT protocol stack and explain any three layers in brief.	**04**
	(c)	What do you mean by enabling technologies of IoT? Explain about each one of them in brief.	**07**
Q.2	**(a)**	Write classification of sensors and classify following sensors in each category: IR sensor, Ultrasonic Sensor, Motion sensor, Temperature and Humidity sensor.	**03**
	(b)	What are the criteria to be considered while selecting sensors for any IOT based application?	**04**
	(c)	What do you mean by pipelining? Explain load and store instruction in ARM7 with pipelining.	**07**
		OR	
	(c)	Which are the different communication protocols in IOT? Enumerate how MQTT can be used for subscribe – publish process.	**07**
Q.3	**(a)**	What is the difference between DDS & MQTT?	**03**
	(b)	How XMPP can be implemented for any messaging application?	**04**
	(c)	Explain functionalities of Li-Fi with suitable example. Write advantages and disadvantages of Li-Fi.	**07**
		OR	
Q.3	**(a)**	Brief about the different types of cloud computing.	**03**
	(b)	What do you mean by edge computing, fog computing and cloud computing? Explain with suitable example.	**04**
	(c)	List challenges while opting for IOT & cloud computing. How can we overcome them?	**07**
Q.4	**(a)**	What is IFTTT? What are the potential advantages of IFTTT?	**03**
	(b)	Draw common architecture of IOT based application and explain each block in brief.	**04**
	(c)	Explain application of IOT in Smart Health Care along with suitable block diagram. Explain each component in brief.	**07**
		OR	
Q.4	**(a)**	What are the features of Arduino Uno?	**03**
	(b)	Explain following functions of Arduino programming: digitalWrite(), digitalRead(), analogWrite(), analogRead(),	**04**
	(c)	What is Raspberry Pi? What are its potential applications? Write features of any one model of Raspberry Pi.	**07**

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Q.5 **(a)** What are the different operating systems of Raspberry Pi? Write potential advantages of anyone. **03**

(b) What is the importance of Security in IOT based applications? **04**

(c) What are the different types of security which should be provided in any IOT based application? **07**

OR

Q.5 **(a)** Draw IoT Security Architecture & explain each component in brief. **03**

(b) What are the challenges in IOT security? **04**

(c) What is Mirai Botnet? Give its importance. **07**

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