

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024****Subject Code:3173215****Date:11-12-2024****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

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|------------|---|-----------|
| Q.1 | (a) Define IoT. Which enabling technologies are the driving force of IoT applications? | 03 |
| | (b) Explain and classify Sensors and Actuators with examples. | 04 |
| | (c) Enlist different layers of IoT Architecture and Explain with a Diagram | 07 |
| Q.2 | (a) What do you mean by messaging protocols? List out different messaging protocols used in IoT. | 03 |
| | (b) Give difference between MQTT and COAP protocols. | 04 |
| | (c) Draw the architecture and explain basic components of 8051 microcontroller. | 07 |
| | OR | |
| | (c) What is ARM? Explain special feature of ARM processor. | 07 |
| Q.3 | (a) Explain following Functions used in Arduino program. pinMode(), digitalWrite(), analogRead() | 03 |
| | (b) What is Raspberry Pi? Write Raspberry Pi code to blink LED ON and OFF. | 04 |
| | (c) Enlist different wireless protocols used in IoT. Explain Zigbee protocol in brief. | 07 |
| | OR | |
| Q.3 | (a) What is PWM? Which pins of Arduino can be used as PWM? Explain with example. | 03 |
| | (b) Write an Arduino sketch for interfacing TMP36 temperature sensor on pin A0. If temperature exceeds 500 units then blink LED connected on pin no D13. Show necessary connections on Arduino kit. | 04 |
| | (c) Explain two internet Protocols used in IoT Application. | 07 |
| Q.4 | (a) Explain the requirement of Fog computing in IoT. | 03 |
| | (b) Explain limitations of cloud computing. | 04 |
| | (c) Explain different security aspects in cloud computing | 07 |
| | OR | |
| Q.4 | (a) List out the different service models in cloud computing. | 03 |
| | (b) What are the challenges while opting for IOT & cloud computing? | 04 |
| | (c) What do you mean by edge computing, fog computing and cloud computing? Explain with suitable example | 07 |
| Q.5 | (a) What are the different types of security that should be provided in any IoT based application? | 03 |
| | (b) Explain the concept of smart city. How IoT can be used in development of a smart city? | 04 |
| | (c) What is Mirai Botnet? Give its importance. | 07 |
| | OR | |
| Q.5 | (a) Enlist different algorithms used for IOT security. | 03 |
| | (b) Explain IoT applications used for smart agriculture | 04 |
| | (c) Explain application of IOT in Smart Health Care along with suitable diagram. | 07 |
