


| Name: | |  | |
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| Enrolment No: | | | |
| UPES End Semester Examination, May 2023 | | | |
| Course : BCA | Program : An Introduction to Programming the Internet of Things | Semester : 4 | Time : 03 hrs. |
| Course Code : CSIS 2010 | | Max. Marks : 100 | |
| Instructions: Attempt all the questions. | | | |
| SECTION A (5Qx4M=20Marks) | | | |
| S. No. | | Marks | CO |
| Q 1 | Define the Internet-of-Things and discuss how it is different from M2M technology. | 4 | CO1 |
| Q 2 | Discuss the significance of Application, Network, and Perception layers in IoT protocol suite. | 4 | CO1 |
| Q 3 | Differentiate between embedded system and general purpose system. | 4 | CO2 |
| Q 4 | Compare between the SPI and UART. | 4 | CO4 |
| Q 5 | Write an Arduino program to display the value of temperature sensed via an analog temperature sensor on serial monitor. | 4 | CO3 |
| SECTION B (4Qx10M= 40 Marks) | | | |
| Q 6 | Explain the limitation of ‘processing everything in cloud’ with reference to the IoT preprocessing step. | 10 | CO1 |
| Q 7 | Discuss the basic components of Arduino microcontroller with the help of a neat and clean diagram. | 10 | CO2 |
| Q 8 | State the purpose of using Arduino libraries. List down at least seven available libraries along with their respective purposes. | 10 | CO3 |
| Q 9 | Develop a composite alarming system for a fire safety application using suitable sensors (measuring temperature, light intensity, humidity, and smoke) and Arduino Uno. The system must activate a buzzer as a warning sign for any fire mishap. Assume appropriate threshold reading for the temperature sensor on your own in the development of aforesaid alarming system. OR Write an Arduino program that uses a single potentiometer to control a series of LEDs (say eight LEDs) in row in a way that turning the potentiometer knob will turn on or off the LEDs. | 10 | CO3 |
| SECTION-C (2Qx20M=40 Marks) | | | |

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| Q 10 | <p>(a) Draw the pinout diagram of 3rd generation raspberry pi board (say that of raspberry pi 3B) with a brief explanation of each of the pins.</p> <p>(b) Write a python program for a Raspberry Pi that flickers the LEDs based on the inputs given by the user.</p> | 20 | CO4 |
| Q 11 | <p>Write short notes on any four of the following:</p> <p>(a) RFID (b) WSN (c) CoAP (d) AMPQ (e) REST (f) MQTT</p> | 20 | CO2 |