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**PRESIDENCY
UNIVERSITY
BENGALURU**

School of Engineering

Mid - Term Examinations - Nov 2024

Semester: 7th

Date: 07/11/2024

Course Code: ECE3083

Time: 9:30am to 11:00am

Course Name: Hardware and Software Architecture for secured IoT Systems

Max Marks: 50

Program: B Tech

Weightage: 25%

Instructions:

- (i) Read all questions carefully and answer accordingly.*
- (ii) Do not write anything on the question paper other than roll number.*

Part A

Answer ALL the Questions. Each question carries 2marks.

5QX2M=10M

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|----------|--|---------|----|-----|
| 1 | An IoT system comprises of a number of blocks that provide the system the capabilities for identification, sensing, actuation, communication and management. Define IoT and List any 4 Challenges and Issues of the IoT. | 2 Marks | L1 | CO1 |
| 2 | Basically, Things refer to IoT Devices that have unique identities and can perform remote sensing, actuating and monitoring capabilities. Define Logical Design of IoT and List any 4 blocks of the same. | 2 Marks | L1 | CO1 |
| 3 | To access, store and distribute the data through the IoT network we need communication models. List all the Standards that uses Zigbee as base. | 2 Marks | L1 | CO2 |
| 4 | An IoT system comprises of a number of blocks that provide the system the capabilities for identification, sensing, actuation, communication and management. List the major segments of GPS. | 2 Marks | L1 | CO2 |
| 5 | Things are connected to each other through local networks and generated enormous data which is sent to cloud. Illustrate the Applications of 6LoWPAN. | 2 Marks | L1 | CO1 |

Part B

Answer ALL Questions. Each question carries 10 marks.

4QX10M=40M

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|----------|-----------|---|--------|----|-----|
| | 6a | Which are the multiple kinds of models available in an Internet of Things system that is used for communicating between the system and server | 2Marks | L2 | CO1 |
| 6 | 6b | Discuss the working of Exclusive Pair model with neat diagram | 6Marks | L2 | CO1 |
| | 6c | Mention the applications in which Exclusive Pair model can be utilized | 2Marks | L2 | CO1 |

Or

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|----------|-----------|--|--------|----|-----|
| 7 | 7a | List different Communication Protocols that are best suited for IoT design based on the range or distance of coverage. | 2Marks | L2 | CO1 |
| | 7b | Discuss the Features and Functionality of Zigbee SE | 6Marks | L2 | CO1 |
| | 7c | Illustrate the Zigbee standards based IoT applications. | 2Marks | L2 | CO1 |
| | 8a | Mention the architectural features of CoAP | 2Marks | L2 | CO2 |
| 8 | 8b | Elaborate in detail about different fields of message format of CoAP | 6Marks | L2 | CO2 |
| | 8c | List the applications of CoAP in IoT design. | 2Marks | L2 | CO2 |

Or

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|-----------|------------|--|--------|----|-----|
| | 9a | Expand IIC, UART, USB, SPI | 2Marks | L2 | CO2 |
| 9 | 9b | Discuss the architectural and Functional differences of USB and UART | 4Marks | L2 | CO2 |
| | 9c | Discuss the architectural and Functional differences of SPI and IIC | 4Marks | L2 | CO2 |
| | 10a | Illustrate the utility of RF-ID in IoT Applications | 2Marks | L2 | CO2 |
| 10 | 10b | Explain the Features and Working of RF-ID | 6Marks | L2 | CO2 |
| | 10c | Discuss the applications of RF-ID | 2Marks | L2 | CO2 |

Or

	11a	Define Cloud Computing and Discuss the importance of Cloud Computing	3Marks	L2	C02
11	11b	Explain the different Cloud Deployment models	5Marks	L2	C02
	11c	List IoT Applications based on Deployment Models	2Marks	L2	C02
	12a	List the Pins of Ultrasonic Sensor	2Marks	L2	C03
12	12b	With interfacing diagram and distance calculation explain the Program for Arduino UNO of Ultrasonic Sensor	7Marks	L2	C03
	12c	List any two applications of Ultrasonic Sensor in IoT design	2Marks	L2	C03
Or					
	13a	List the features of ARM Processors	2Marks	L2	C03
13	13b	Discuss major components of Raspberry Pi board for IoT design	4Marks	L2	C03
	13c	Explain the ARM has 8 stage Pipeline.	4Marks	L2	C03