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 **PRESIDENCY UNIVERSITY**

  **Bengaluru**

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| **End - Term Examinations – JANUARY 2025** |
| **Date:** 11 / 01/ 2025 **Time:** 09:30am – 12:30pm |

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| **School:** School Of Engineering | **Program:** B Tech-ECE |
| **Course Code :** ECE3083 | **Course Name :**Hardware & Software Architecture for IoT |
| **Semester**:VII | **Max Marks**:100 | **Weightage**:50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** |
| **Marks** | **22** | **25** | **30** | **23** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

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| **Answer ALL the Questions. Each question carries 2marks. 10Q x 2M=20M** |
| **1** | Things refer to IoT Devices that have unique identities and can perform remote sensing, actuating and monitoring capabilities. List and Define any 4 characteristics of IoT. | **2 Marks** | **L1** | **CO1** |
| **2** | There are multiple kinds of models available in an Internet of Things system that is used for communicating between the system and server. An HTTP or Client Server application uses which type of communication model. | **2 Marks** | **L1** | **CO4** |
| **3** | SCADA is a category of software applications for controlling industrial processes. Expand SCADA. | **2 Marks** | **L1** | **CO4** |
| **4** | Cloud storage delivers cost-effective, scalable storage. Which type of cloud is owned explicitly by an end user organization, defined as everything behind a company’s walls? | **2 Marks** | **L1** | **CO1** |
| **5** | List any 4 functions of Arduino programming for IoT | **2 Marks** | **L1** | **CO4** |
| **6** | Clustering network comprises of three main types of nodes. List and Define CH and Gateway Node | **2 Marks** | **L1** | **CO4** |
| **7** | Clustering Supports network scalability Presence of CH reduces routing overhead. Expand LEACH and S-Web. | **2 Marks** | **L1** | **CO1** |
| **8** | Cloud computing enables storing data and files on the internet that can be access either through the public internet or a dedicated private network connection. Expand WAMP and mention its alternate name for IoT. | **2 Marks** | **L1** | **CO1** |
| **9** | Cloud storage removes the need to buy and manage your own data storage infrastructure, giving you agility, scalability, and durability, with anytime, anywhere data access. Xively Cloud is an example of which type of Service Model. | **2 Marks** | **L1** | **CO1** |
| **10** | Cloud storage delivers virtually unlimited storage capacity, allowing you to scale up as much and as Quickly. Which are the two Parameters or Keys required for Xively cloud usage. | **2 Marks** | **L1** | **CO1** |

**Part B**

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| **Answer the Questions Total 80 Marks** |
| **11.** | **a.** | A physical design of an IoT system refers to the individual node devices and their protocols that are utilized to create a functional IoT ecosystem. Discuss the generic block diagram of IoT in detail. | **10****Marks** | **L2** | **CO1** |
| **or** |
| **12.** | **a.** | A logical design for an IoT system is the actual design of how its components (computers, sensors, and actuators) should be arranged to complete a particular function. Discuss the IoT functional blocks of Logical Design. | **10****Marks** | **L2** | **CO1** |
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| **13.** | **a.** | There are multiple kinds of models available in an Internet of Things system that is used for communicating between the system and server. Explain with diagram Request Response and Push Pull Model. | **10****Marks** | **L2** | **CO2** |
| **or** |
| **14.** | **a.** | Communication Technologies & Protocols provides Short range and Long range IoT Solution. With architectural features explain IPv6 Protocol in detail. | **10****Marks** | **L2** | **CO2** |

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| **15.** | **a.** | Communication Technologies & Protocols provides Short range and Long range IoT Solution. With neat diagram explain the working of MQTT protocol along with its advantages. | **10****Marks** | **L2** | **CO3** |
| **Or** |
| **16.** | **a.** | Communication Technologies & Protocols provides Short range and Long range IoT Solution. With architectural features explain the working of RF-ID protocol. | **10****Marks** | **L2** | **CO3** |

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| **17.** | **a.** | Discuss the Anatomy of Arduino board. Explain in detail interfacing program of Ultrasonic sensor for arduino using neat diagram and calculation. | **15****Marks** | **L3** | **CO4** |
| **Or** |
| **18.** | **a.** | Discuss the Anatomy of Raspberyy PI board. Explain in detail interfacing program of LED and Switch for Raspberry PI using neat diagram with Python. | **15****Marks** | **L3** | **CO4** |

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| **19.** | **a.** | Web of Things (WoT) aims to resolve these issues by standardizing the IoT. Explain in detail TD, TM and Links with respect to WoT. | **15****Marks** | **L2** | **CO2** |
| **Or** |
| **20.** | **a.** | Discuss the major segments of ARM Processor. List and explain the all the Processor modes of ARM. | **15****Marks** | **L2** | **CO2** |

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| **21.** | **a.** | Define IoT. List the Characteristics and Challenges of IoT. Elaborate the concept of Clustering with respect to Definition, Advantages and working of LCA protocol. | **20****Marks** | **L2** | **CO3** |
| **Or** |
| **22.** | **a.** | List the features of ARM1176JZFS. Discuss the ARM Instruction set. Write a Program to blink a LED using Python with interfacing diagram. | **20****Marks** | **L3** | **CO3** |

**\*\*\*\*\* BEST WISHES \*\*\*\*\***