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**MCA**  
**(SEM IV) THEORY EXAMINATION 2023-24**  
**INTERNET OF THINGS**

**TIME: 3 HRS****M.MARKS: 100****Note: 1.** Attempt all Sections. If require any missing data, then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

|    |   |    |
|----|---|----|
| a. | What are the different components required for IoT devices?   | 02 |
| b. | Discuss any two wireless communication technologies used in IoT.  | 02 |
| c. | What are the different sources of IoT?  | 02 |
| d. | How digital sensors are different from analog sensors?  | 02 |
| e. | Explain the purpose of actuators with examples.   | 02 |
| f. | Explain 6LoWPAN.  | 02 |
| g. | What do you mean by data aggregation and dissemination?   | 02 |
| h. | What is the purpose of the simulator? Name some simulators that are used for building an IoT application. | 02 |
| i. | Discuss some development challenges in IoT design.  | 02 |
| j. | Why is security required in IoT?  | 02 |

**SECTION B****2. Attempt any three of the following:****3 x 10 = 30**

|    |  |    |
|----|--|----|
| a. | Discuss the conceptual framework of IoT with a diagram.  | 10 |
| b. | Discuss participatory sensing technology and its components.                                   | 10 |
| c. | What do you mean by sensor node deployment? Discuss various sensor node deployment techniques. | 10 |
| d. | Discuss different Arduino boards with their features.  | 10 |
| e. | Explain a few challenges in IoT design with some examples.                                     | 10 |

**SECTION C****3. Attempt any one part of the following:****1 x 10 = 10**

|    |  |    |
|----|--|----|
| a. | Discuss data enrichment & consolidation techniques in IoT.         | 10 |
| b. | Discuss key components of M2M communication with its architecture. | 10 |

**4. Attempt any one part of the following:****1 x 10 = 10**

|    |   |    |
|----|---|----|
| a. | Illustrate the working of RFID. What are its application areas? | 10 |
| b. | Explain wireless sensor networks with their applications.       | 10 |

**5. Attempt any one part of the following:****1 x 10 = 10**

|    |   |    |
|----|---|----|
| a. | Discuss the MQTT protocol with a suitable example.            | 10 |
| b. | Examine different issues faced during wireless medium access. | 10 |

**6. Attempt any one part of the following:****1 x 10 = 10**

|    |  |    |
|----|--|----|
| a. | Explain programming the Arduino for IoT. | 10 |
| b. | Discuss the Arduino board pin diagram.   | 10 |

**7. Attempt any one part of the following:****1 x 10 = 10**

|    |  |    |
|----|--|----|
| a. | Explain Smart Home Automation with its challenges. | 10 |
| b. | Describe communicating data with hardware units    | 10 |