***RG 22Regulation***

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**BRANCH:DS YEAR/SEM: IV/I**

**COURSE TITLE:** **Internet of Things (22A0530c) ACADEMIC YEAR: 2025-26**

**FACULTY: Mr. RAMESH DAMPURU**

| **INTERNET OF THINGS**  **QUESTION BANK** |
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**UNIT-I-Overview of IoT**

**2-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | Define IoT. | **1** | **1** | **2** |
| **2** | What are enchanted objects in IoT? | **1** | **2** | **2** |
| **3** | List any two design principles of connected devices. | **1** | **2** | **2** |
| **4** | What is “Web Thinking” in IoT design? | **1** | **2** | **2** |
| **5** | Define “Calm Technology.” | **1** | **1** | **2** |
| **6** | What is prototyping? | **1** | **2** | **2** |
| **7** | Write the Differentiate between open-source and closed-source development. | **1** | **2** | **2** |
| **8** | What is the role of privacy in IoT design? | **1** | **2** | **2** |
| **9** | Mention two advantages of community-driven prototyping. | **1** | **2** | **2** |
| **10** | What are affordances in connected devices? | **1** | **2** | **2** |

**12-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | Explain the evolution and technology of the Internet of Things with examples. | **1** | **2** | **12** |
| **2** | Describe the various flavors or categories of the Internet of Things. Give examples for each | **1** | **3** | **12** |
| **3** | Describe the significance of prototyping in IoT with relevant examples. | **1** | **3** | **12** |
| **4** | Compare and contrast open-source and closed-source platforms in IoT. | **1** | **4** | **12** |
| **5** | Illustrate “Calm and Ambient Technology” and its role in IoT system design. | **1** | **5** | **12** |
| **6** | Explain the concept of affordances in IoT design with suitable examples. | **1** | **3** | **12** |
| **7** | Analyze privacy challenges in IoT and propose suitable solutions. | **1** | **5** | **12** |
| **8** | Describe the importance of community in IoT prototyping and innovation. | **1** | **1** | **12** |
| **9** | Explain the concept of Web Thinking in the context of IoT-connected devices | **1** | **4** | **12** |
| **10** | Create a simple IoT prototype idea and explain its basic sketch and planning | **1** | **4** | **12** |

**UNIT-II- Embedded Devices**

**2-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | What is embedded computing? | **2** | **1** | **2** |
| **2** | List any two features of Arduino. | **2** | **2** | **2** |
| **3** | Mention two applications of Raspberry Pi. | **2** | **1** | **2** |
| **4** | What is plug computing? | **2** | **2** | **2** |
| **5** | Define microcontroller. | **2** | **1** | **2** |
| **6** | What is GPIO in Raspberry Pi? | **2** | **2** | **2** |
| **7** | Differentiate between Arduino and Raspberry Pi. | **2** | **4** | **2** |
| **8** | What are the limitations of mobile devices in IoT? | **2** | **4** | **2** |
| **9** | Mention two examples of embedded IoT boards. | **2** | **1** | **2** |
| **10** | What is the role of sensors in embedded systems? | **2** | **2** | **2** |

**12-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | 1.Compare Arduino and Raspberry Pi in terms of architecture and application. | **2** | **4** | **12** |
| **2** | 2.Explain how embedded systems enable IoT solutions. | **2** | **2** | **12** |
| **3** | 3.Illustrate the working of Raspberry Pi with a block diagram. | **2** | **3** | **12** |
| **4** | 4.Discuss the significance of always-on devices in IoT. | **2** | **5** | **12** |
| **5** | 5.Describe how mobile phones and tablets are used in IoT environments. | **2** | **3** | **12** |
| **6** | 6.Explain the concept of plug computing and its impact on IoT devices. | **2** | **4** | **12** |
| **7** | 7.Design a basic IoT project using Arduino. Include block diagram and components. | **2** | **4** | **12** |
| **8** | 8.Discuss the role of embedded computing in smart home automation. | **2** | **3** | **12** |
| **9** | 9.Explain the boot process and programming of Raspberry Pi. | **2** | **2** | **12** |
| **10** | 10.Evaluate the use of open-source embedded platforms for IoT innovation. | **2** | **4** | **12** |

**UNIT-III-Communication in the IoT**

**2-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | Define IP address. | **3** | **1** | **2** |
| **2** | What is MAC address? | **3** | **1** | **2** |
| **3** | Differentiate TCP and UDP. | **3** | **2** | **2** |
| **4** | What is the role of application layer in IoT communication? | **3** | **2** | **2** |
| **5** | Define HTTP. | **3** | **1** | **2** |
| **6** | What is an API? | **3** | **2** | **2** |
| **7** | Mention two real-time communication protocols in IoT. | **3** | **1** | **2** |
| **8** | What is RESTful API? | **3** | **2** | **2** |
| **9** | Define port number in TCP/IP. | **3** | **1** | **2** |
| **10** | What is the use of MQTT in IoT? | **3** | **2** | **2** |

**12-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | Explain the TCP/IP model with its relevance to IoT communication. | **3** | **2** | **12** |
| **2** | Describe various application layer protocols used in IoT. | **3** | **2** | **12** |
| **3** | Compare TCP and UDP protocols for IoT applications. | **3** | **4** | **12** |
| **4** | Demonstrate how to connect an IoT device to a cloud using HTTP/REST API. | **3** | **3** | **12** |
| **5** | Explain how real-time communication is established in IoT using MQTT. | **3** | **3** | **12** |
| **6** | Analyze the importance of IP and MAC addresses in IoT networking. | **3** | **4** | **12** |
| **7** | Develop a simple IoT API structure for a smart agriculture system. | **3** | **4** | **12** |
| **8** | Discuss the architecture of RESTful services in IoT. | **3** | **2** | **12** |
| **9** | Evaluate various options for online data exchange in real-time applications. | **3** | **4** | **12** |
| **10** | Illustrate a scenario showing end-to-end communication in an IoT system. | **3** | **3** | **12** |

**UNIT-IV-Business Models**

**2-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | What is a business model? | **4** | **1** | **2** |
| **2** | Define lean startup. | **4** | **1** | **2** |
| **3** | What is a business model canvas? | **4** | **2** | **2** |
| **4** | Mention two funding sources for IoT startups. | **4** | **2** | **2** |
| **5** | What are the components of business model canvas? | **4** | **1** | **2** |
| **6** | Define product-market fit. | **4** | **2** | **2** |
| **7** | List any two monetization strategies for IoT. | **4** | **1** | **2** |
| **8** | What is the use of MVP in IoT startups? | **4** | **2** | **2** |
| **9** | Define value proposition. | **4** | **1** | **2** |
| **10** | What is crowd funding? | **4** | **2** | **2** |

**12-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | Describe the evolution of business models in the context of IoT. | **4** | **2** | **12** |
| **2** | Explain the business model canvas with reference to an IoT product. | **4** | **3** | **12** |
| **3** | Analyze different sources of funding for IoT startups. | **4** | **4** | **12** |
| **4** | Discuss lean startup methodology and its application in IoT ventures. | **4** | **3** | **12** |
| **5** | Design a business model for a smart healthcare product. | **4** | **4** | **12** |
| **6** | Explain how design thinking helps in creating innovative IoT products. | **4** | **1** | **12** |
| **7** | Evaluate the challenges faced during the commercialization of IoT solutions. | **4** | **4** | **12** |
| **8** | Illustrate the journey from prototype to product in an IoT startup. | **4** | **4** | **12** |
| **9** | Create a business plan for a smart irrigation system using IoT. | **4** | **4** | **12** |
| **10** | Compare traditional and lean models in the context of IoT businesses. | **4** | **4** | **12** |

**UNIT-V-Manufacturing Process**

**2-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | What is PCB? | **5** | **1** | **2** |
| **2** | Define mass production. | **5** | **1** | **2** |
| **3** | What is product certification? | **5** | **2** | **2** |
| **4** | List two ethical issues in IoT. | **5** | **2** | **2** |
| **5** | Define IoT scaling. | Understand | | **6** | **2** | **2** |
| **6** | Mention two costs involved in IoT manufacturing. | **6** | **1** | **2** |
| **7** | What is the importance of environmental consideration in IoT? | **6** | **4** | **2** |
| **8** | What is firmware? | **6** | **2** | **2** |
| **9** | Define sustainability in IoT manufacturing. | **6** | **2** | **2** |
| **10** | List any two IoT-related certifications. | **6** | **1** | **2** |

**12-Marks Questions**

| **S.No** | **Question** | **CO** | **BL** | **Marks** |
| --- | --- | --- | --- | --- |
| **1** | Explain the complete PCB manufacturing process for an IoT device | **5** | **2** | **12** |
| **2** | Discuss cost estimation and production scaling in IoT product development. | **5** | **4** | **12** |
| **3** | Describe the importance of certifications in IoT devices. | **5** | **2** | **12** |
| **4** | Analyze the role of environmental and ethical concerns in IoT. | **5** | **4** | **12** |
| **5** | Discuss the process of designing a mass-production ready IoT product. | **6** | **3** | **12** |
| **6** | Evaluate challenges in scaling up software for IoT deployments. | **6** | **4** | **12** |
| **7** | Explain various ethical dilemmas in IoT product deployment and how to address them | **6** | **4** | **12** |
| **8** | Create a manufacturing plan for a low-cost wearable IoT device. | **6** | **1** | **12** |
| **9** | Describe how manufacturing affects cost, quality, and time to market in IoT. | **6** | **4** | **12** |
| **10** | Explain sustainability practices in IoT and their long-term impact. | **6** | **4** | **12** |

**Signature of the Staff:**

**Signature of Department Academic Committee Member 1:**

**Signature of Department Academic Committee Member 2:**

**Signature of Department Academic Committee Member 3:**

| **CO1: Understand the Basic sensors and actuators for an IoT application. Understand (L2) Module-1**  **CO2: Experiment with embedded boards for creating IoT prototypes. (Apply)L3 Module-2**  **CO3: Choose protocols for a specific IoT application. (Apply)L3 Module-3**  **CO4: Utilize the cloud platform and APIs for IoT applications. (Apply)L3 Module-3**  **CO5: Design a solution for a given IoT application. (Create) L6 Module-4**  **CO6: Analyze various areas of IOT applications. (Analyze) L4 Module-5** |
| --- |