SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

AN AUTONOMOUS INSTITUTION

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

INTERNAL ASSESSMENT EXAMINATION – I

V Semester

B.Tech.-Artificial Intelligence and Data Science

19AD505 – Internet of Things and AI

Question bank

2 MARK

1. List out the role of IPV6.

2. Compare IoT and M2M. Discuss the key similarities and differences between these two technologies

3. What are the technical challenges of IOT?

4. Identify and explain the key technical challenges associated with implementing Internet of Things (IoT) solutions.

5. Identify and explain which level(s) of the Internet of Things (IoT) architecture would be utilized in a smart irrigation system. How do these levels contribute to the efficient functioning of the system?

6. Define the working of IOT.

7. Explain the various ITU-T views related to telecommunications and networking. How do these views help in understanding and designing telecommunications systems?

8. List and describe the key components of an Internet of Things (IoT) system. How does each component contribute to the overall functionality of the IoT system?

9. Differentiate Physical entity and virtual entity.

10. Define Requirement Specification in the context of IoT design methodologies. How does Requirement Specification help in shaping the development and implementation of IoT systems?

LONG QUESTIONS

1. Analyse the physical design of an Internet of Things (IoT) system by creating a detailed diagram. Evaluate how the design influences the system's performance and scalability, considering factors such as component interactions, data flow, and network architecture.

2. Analyse the basic nodal capabilities required for an effective Internet of Things (IoT) system. Evaluate how these capabilities impact the overall system performance and integration. Discuss how variations in these capabilities might influence the design and functionality of IoT applications.

3. Analyse and list the purpose and requirement specification, process specification for your own application. Evaluate how each of these specifications influences the overall design and functionality of the application.

4. Analyse the logical design of an IoT device by creating a detailed diagram. Evaluate how the logical components and their interactions contribute to the device's functionality and performance.

5. Evaluate how IoT technology can be applied in the following application areas: (i) City Automation, (ii) Wearable Electronics, and (iii) Smart Irrigation. Justify the effectiveness of IoT solutions in each area by discussing their potential benefits, challenges, and impact on overall system efficiency and user experience.

6. Designing a demo IoT Smart Office that includes a Ceiling Fan, Lamp, Front Door Lock, Lawn Sprinkler System, and AC. Evaluate the setup by addressing the following:

Devices and Technologies

IoT Architecture Levels

Functions and Services

Integration and Impact

7. Describe the logical design of an IoT device, identifying its key components and explaining their roles within the device's operation. How does each component contribute to the overall functionality and effectiveness of the IoT device?

8. Consider a home automation system designed to manage a smart thermostat, lighting, and security cameras. Using your understanding of IoT Levels, explain how this system would be implemented at that level. Discuss the specific features and capabilities that make that Level appropriate for this scenario.

9. Imagine you are designing an IoT system for a smart city project that includes street lighting and environmental sensors. Select an IoT framework and describe how you would use it to connect and manage these devices. Explain how the framework helps in collecting data, sending commands, and ensuring secure communication.

10. Analyse the Domain Model Specification and Information Model Specification for a given IoT application of your choice (e.g., a smart agriculture system or a smart healthcare system). List and describe the key elements of each specification. Evaluate how these specifications impact the overall design, functionality, and performance of the application.

11. Analyse the integration of IoT technology in the following application areas: Smart Vehicles and Smart Healthcare. For each area:

Identify and detail the primary IoT technologies and components

Analyse how these technologies are integrated

Discuss the specific challenges faced during the integration of IoT technologies and the strategies used to overcome them in each application area.

12.You have recently joined as an IoT Architect at an organization. A client requests the setup of a smart agriculture system to manage and optimize various aspects of farming, such as soil moisture, irrigation, and crop monitoring.

Analyse the IoT technologies and components required for each aspect of the smart agriculture system

Evaluate the impact of implementing these IoT solutions

HOD