ACHARYA INSTITUTE OF TECHNOLOGY (BENGALURU 560107)

Dept of CSE

Internet of Things (21CS735)

Assignment 2

Handout Date: 04/12/24 **Submission Date: 12/12/24**

1. Explain the IEEE 802.15.1 architecture. How does it compare with the OSI model layers in terms of functionality?

2. List and explain the key features of Zigbee. How does it differ from Bluetooth in terms of communication range, power consumption, and data rate?

3. Imagine you are tasked with setting up a smart home system. You need a wireless communication protocol that offers low power consumption and supports device-to-device communication in a short range. Which IoT connectivity technology would you recommend, and why?

4. Describe the key differences between Wireless HART and ISA100.11a protocols. How do they contribute to industrial IoT networks?

5. You are deploying an industrial IoT network in a remote area where cellular coverage is limited. You require a low-power wide-area network (LPWAN) technology that supports long-range communication. Which connectivity technology would you choose, and why?

6. Compare and contrast the use cases of Wi-Fi and Bluetooth in IoT applications. What are the advantages and limitations of each protocol for IoT connectivity?

7. What are infrastructure protocols in the context of IoT communication? Provide examples and explain their role in enabling IoT systems.

8. In a large-scale IoT deployment with multiple devices that need to discover each other dynamically, which discovery protocol would you use? How does this protocol ensure efficient device discovery in such a large environment?

9. Explain the role of semantic protocols in data interpretation and interoperability between heterogeneous IoT systems. How do these protocols contribute to data consistency across different platforms?

10. In a smart city scenario, where multiple sensors and devices (such as traffic lights, cameras, and environmental sensors) need to communicate and work together, how do discovery protocols enhance the effectiveness of the IoT system?

Note:

- **All students have to submit on 12/12/24 during IoT Class hour.**
- **If you will be absent on that day, please submit to Class Representatives, they will collect the copy together and submit the same at above mentioned time and date.**