

## DEPARTMENT OF ECE

Course Code & Name : **23ECE307 – Wireless Technologies for IOT**

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### Question Bank

#### Unit I – OVERVIEW OF INTERNET OF THINGS

#### PART A – Short Answer questions

Serial Number	Questions	Blooms level	Referred company name or GATE with year
1	Define IoT and explain its conceptual framework. (Qualcomm - Placement Interview)	Remember	Qualcomm
2	What is the difference between IoT and M2M communication? (Huawei - Virtual Internship)	Understand	Huawei
3	List any four sources of IoT technologies. (Intel - Placement Interview)	Remember	Intel
4	Provide two real-world examples of IoT applications. (Cisco Systems - In-house Training)	Remember	Cisco Systems
5	Draw the basic IoT architectural view. (Texas Instruments - Placement Interview)	Remember	Texas Instruments
6	What are the key technologies behind IoT? (Broadcom - Virtual Internship)	Remember	Broadcom
7	Explain the role of data enrichment in IoT/M2M gateway. (Ericsson - Placement Interview)	Understand	Ericsson
8	What is data consolidation in the context of IoT/M2M systems? (Samsung Electronics - In-house Training)	Understand	Samsung Electronics
9	Describe device management at IoT/M2M gateway. (NVIDIA - Placement Interview)	Understand	NVIDIA
10	Name the web communication protocols used by connected IoT/M2M devices. (Bharat Electronics Limited - Virtual Internship)	Remember	Bharat Electronics Limited
11	What is the full form of CoAP and its variants like CoAP-SMS and CoAP-MQ? (Qualcomm - Placement Interview)	Remember	Qualcomm
12	Explain the purpose of MQTT protocol in IoT/M2M devices. (Huawei - In-house Training)	Understand	Huawei

Serial Number	Questions	Blooms level	Referred company name or GATE with year
13	What is XMPP and its role in message communication for IoT? (Intel - Virtual Internship)	Understand	Intel
14	Describe the modified OSI model for IoT/M2M systems. (Cisco Systems - Placement Interview)	Understand	Cisco Systems
15	List the message communication protocols for IoT/M2M devices. (Texas Instruments - In-house Training)	Remember	Texas Instruments
16	What is the primary function of an IoT/M2M gateway? (Broadcom - Placement Interview)	Remember	Broadcom
17	Give examples of IoT in smart cities. (Ericsson - Virtual Internship)	Remember	Ericsson
18	Explain M2M communication with a simple block diagram. (Samsung Electronics - Placement Interview)	Understand	Samsung Electronics
19	What are the main components in the IoT conceptual framework? (NVIDIA - In-house Training)	Remember	NVIDIA
20	Compare traditional OSI model with modified OSI for IoT. (Bharat Electronics Limited - Placement Interview)	Understand	Bharat Electronics Limited

**PART B – Descriptive and Problem solving questions (including 3 case study questions)**

Serial Number	Questions	Blooms level	Referred company name or GATE with year
1	Explain in detail the IoT conceptual framework and architectural view, highlighting the technologies behind IoT. (Qualcomm - Technical Interview)	Analyze	Qualcomm
2	Describe the sources of IoT and provide examples of IoT applications with block diagrams. Evaluate the role of M2M communication in IoT systems. (Huawei - Case Study for Virtual Internship)	Apply	Huawei
3	Discuss the modified OSI model for IoT/M2M systems and explain data enrichment, consolidation, and device management at the gateway with suitable diagrams. (Intel - Problem-solving Assignment)	Analyze	Intel
4	Elaborate on web communication protocols used by connected IoT/M2M devices and their adherence to industry standards. (Cisco Systems - Technical Interview)	Analyze	Cisco Systems
5	Compare and contrast the message communication protocols CoAP (including CoAP-SMS, CoAP-MQ), MQTT, and XMPP for IoT/M2M devices, evaluating their performance in constrained environments. (Texas Instruments - Case Study for In-house Training)	Analyze	Texas Instruments
6	Design a basic IoT/M2M system architecture showing gateway functions like data enrichment and device management. Analyze	Analyze	Broadcom

Serial Number	Questions	Blooms level	Referred company name or GATE with year
	potential challenges in real-world deployment. (Broadcom - Project-based Training Task)		
7	Explain the complete flow in an IoT system from sources to applications, including M2M communication and gateway roles. (Ericsson - Technical Interview)	Analyze	Ericsson
8	<b>Case Study 1:</b> Qualcomm is developing a 5G-enabled smart healthcare IoT system for remote patient monitoring. Design the complete IoT conceptual framework and architectural view for this system. Explain the role of M2M communication between wearable sensors and gateways, including data enrichment and consolidation at the gateway. Evaluate the suitability of MQTT and CoAP protocols for real-time vital signs transmission in constrained battery-powered devices, considering bandwidth and reliability. (Qualcomm - Case Study for Virtual Internship)	Apply	Qualcomm
9	<b>Case Study 2:</b> Huawei's smart city project involves deploying thousands of IoT devices for traffic and environmental monitoring. Describe the modified OSI model adapted for this IoT/M2M system. Analyze the functions of the IoT gateway in device management, data enrichment, and consolidation. Compare the use of XMPP, MQTT, and CoAP variants (CoAP-SMS/CoAP-MQ) as message communication protocols, evaluating their performance in terms of scalability, security, and power consumption for large-scale urban deployment adhering to industry standards. (Huawei - Case Study for Technical Interview)	Analyze	Huawei
10	<b>Case Study 3:</b> In Ericsson's industrial IoT (IIoT) solution for predictive maintenance in factories, sensors on machinery communicate via M2M. Illustrate the IoT architectural view with sources of IoT technologies and real-world examples integrated into the system. Discuss web and message communication protocols used by connected devices. Evaluate potential challenges in gateway-based data management and propose solutions using protocols like MQTT for low-latency alerts, ensuring high reliability and minimal downtime in a mission-critical environment. (Ericsson - Case Study for In-house Training)	Apply	Ericsson