**R22**

**Code No: 185DA**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year I Semester Examinations, January - 2025**

**IOT ARCHITECTURES AND PROTOCOLS**

**(Electronics and Communication Engineering)**

**Time: 3 Hours** **Max. Marks: 60**

**Note:** This question paper contains two parts A and B.
i) Part- A for 10 marks, ii) Part - B for 50 marks.

- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of ten questions (numbered from 2 to 11) carrying 10 marks each. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

## PART- A

**(10 Marks)**

| | | |
|---|---|---|
| 1.a) | How are sensing types and actuator types used in IoT systems? | [1] |
| b) | What is the role of actuators in IoT systems? | [1] |
| c) | What is the primary similarity between IoT and M2M? | [1] |
| d) | Define the term global information monopoly in IoT. | [1] |
| e) | How does 6TiSCH enhance 6LoWPAN capabilities? | [1] |
| f) | What is the role of IEEE 802.15 in IoT? | [1] |
| g) | Define CoAP and its application in IoT. | [1] |
| h) | How does SCTP differ from UDP in IoT? | [1] |
| i) | What is the role of BBF in IoT service layer protocols? | [1] |
| j) | What does defragmentation mean in the context of IoT protocols? | [1] |

## PART - B

**(50 Marks)**

| | | |
|---|---|---|
| 2.a) | Discuss the characteristics of IoT that make it unique compared to traditional systems. | |
| b) | Explain the various levels of IoT with suitable diagrams. | [6+4] |

**OR**

| | | |
|---|---|---|
| 3.a) | Explain the role of enabling technologies in IoT with examples. | |
| b) | Discuss the challenges associated with scaling IoT networks. | [5+5] |
| 4.a) | Compare and contrast the differences and similarities between M2M and IoT with relevant examples. | |
| b) | Discuss the role of IoT data management and compute stack in data-intensive applications. | [5+5] |

**OR**

| | | |
|---|---|---|
| 5.a) | Explain the role of SDN and NFV in IoT and their involvement in flexibility and scalability. | |
| b) | Describe the components of IoT architecture and explain their interdependencies. | [5+5] |

6.a) Discuss Wireless HART and Z-Wave, emphasizing their use in industrial IoT.
b) Describe the structure and features of DASH7 and its use in IoT networks. [5+5]

**OR**

7.a) Describe the role of 6LoWPAN in IoT architecture and its interaction with IPv6.
b) Compare CORPL and CARP protocols in IoT, focusing on their unique features. [5+5]

8.a) Discuss the role of MQTT and AMQP in IoT messaging and data transfer.
b) Compare DCCP with traditional transport layer protocols in IoT systems. [5+5]

**OR**

9.a) How does DTLS ensure secure communication in IoT networks? Explain.
b) Discuss the performance of AMQP in large-scale IoT networks. [5+5]

10.a) Compare security implementations at the application and network layers in IoT.
b) Explain the role of ETSI M2M in ensuring interoperability in IoT ecosystems. [5+5]

**OR**

11.a) How does 6LoWPAN ensure data confidentiality and integrity in IoT networks? Explain.
b) Discuss the integration of one M2M with existing IoT infrastructures. [5+5]

**---ooOoo---**