Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (R,S) Exam April 2025 (2019 Scheme)

Course Code: ECT458

Course Name: INTERNET OF THINGS

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1	Explain the logical design of IoT.	(3)
2	Define IoT with an example use case.	(3)
3	List the common communication protocols used in wireless sensor networks.	(3)
4	What advantages make SDN a preferred choice over conventional network architectures?	(3)
5	Explain the IEEE 802.15.4e standard and emphasize its key features and their significance.	(3)
6	Describe RPL, its key features, and its role in enabling efficient communication in IoT environments.	(3)
7	Explain cloud computing.	(3)
8	Identify the features of Raspberry pi.	(3)
9	List the layered attacker models used in IoT security and briefly explain one.	(3)
10	Explain the concept of vertical IoT needs in smarter cities.	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11		Explain the seven levels of IoT with a labeled diagram, and include examples to demonstrate how each level enhances IoT functionality.	(14)
		OR	
12	a)	Describe the functional blocks of IoT, supported by a neat and labeled diagram, and explain their roles in IoT applications.	(7)
	b)	Explain the architectural view of IoT with a neat and labeled diagram, describing the roles of each layer in enabling IoT applications.	(7)

Module II

13	a)	Describe the communication processes in M2M and IoT, and outline the key differences between them.	(7)
	b)	Describe the concept of Network Function Virtualization (NFV) in IoT and support your explanation with a labeled diagram.	(7)

OR

14	a)	Describe the role of sensors and actuators in IoT applications.	(7)
	b)	Define smart objects, describe their four defining characteristics, and discuss the limitations they face in Wireless Sensor Networks (WSNs).	(7)

Module III

15	a)	Describe the architecture of LoRaWAN, providing a detailed explanation of its physical layer and MAC layer.	(9)
	b)	Explain the features of Modbus.	(5)

OR

16	a)	Illustrate the Zigbee protocol architecture using a diagram and provide an explanation of its components and functionality.	(8)
	b)	Explain the significance of 6LoWPAN Adaptation layer.	(6)

Module IV

17	a)	Discuss the fundamental building blocks of IoT physical devices and endpoints, emphasizing their components and roles.	(7)
	b)	Explain the cloud computing paradigm for data collection, storage, and computing.	(7)

OR

18	a)	Describe the four service models of clouds.	(8)
	b)	Explain the three Raspberry-Pi Interfaces.	(6)

Module V

19	a)	Discuss the security architecture for smart cities and its importance in safeguarding critical infrastructure.	(7)
	b)	Provide an overview of threat analysis techniques for IoT systems, emphasizing their significance.	(7)

OR

20	a)	Describe the four-layer smart city architecture using a diagram.	(8)
	b)	Identify the top ten vulnerabilities that can be exploited in cyberattacks.	(6)

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