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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (Minor) Examination November 2025 (2024 Admn)

Course Code: MNCST329

Course Name: SENSORS AND DEVICES

Max. Marks: 60 Duration: 2 hours 30 minutes

PART A

(Answer all questions. Each question carries 3 marks)

		CO	Marks
1	Explain why signal amplification is required in practical applications.	1	(3)
2	Describe the concept of an embedded system with an example.	1	(3)
3	Illustrate the principle of operation of a transducer.	2	(3)
4	Explain what an actuator is and give one example of its application.	2	(3)
5	Illustrate how light sensors are used in IoT systems?	3	(3)
6	Explain how to measure distance with an ultrasonic sensor.	3	(3)
7	Describe the key characteristics and description of the first generation of IoT devices.	4	(3)
8	Explain the key characteristics and description of integrated IoT sensors.	4	(3)

PART B

(Answer any one full question from each module, each question carries 9 marks)

Module -1

			CO	Marks
9	a)	Explain how an analog signal is converted into a digital signal with the help of an example or a diagram.	1	(9)

10	a)	Describe the main features and characteristics of embedded systems. How do these features make embedded systems suitable for specific tasks?	1	(9)

Module -2

11	a)	Explain the significance of physical design in IoT.	2	(5)
	b)	Describe the role of sensors and actuators in IoT systems.	2	(4)
12	a)	Explain different types of IoT communication models.	2	(9)

Module -3

13	a)	A smart indoor farming system uses a DHT11 sensor to monitor climate conditions. In this scenario, explain how the DHT11 sensor works and how it supports automatic climate control.	3	(9)
14	a)	With a neat sketch, explain the operation of the ultrasonic proximity sensor and list its application areas.	3	(9)

Module -4

15	a)	Given a smart agriculture system, identify the characteristics of advanced generation IoT devices used in it and explain how these devices enhance precision farming and contribute to the development of the IoT ecosystem.	4	(9)
16	a)	In a smart traffic management system, explain how a sensor swarm can be applied to monitor and control traffic flow efficiently. Identify its key characteristics that enable real-time decision-making and collaboration among IoT devices.	4	(9)

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