

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree Supplementary Examination October 2023 (2019 Scheme)

Course Code: CST448**Course Name: INTERNET OF THINGS****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

Marks

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|----|------------------------------------------------------------------------------------------------------------------------------|-----|
| 1 | Differentiate between Operational Technology (OT) and Information Technology (IT). | (3) |
| 2 | Depict the data management in traditional IT systems and list several data-related problems it needs to be addressed. | (3) |
| 3 | With a neat diagram, describe how sensors and actuators interact with the physical world. | (3) |
| 4 | Comment on the trends in smart objects. | (3) |
| 5 | Mention the key advantages of Internet Protocol. | (3) |
| 6 | List and explain the factors that needs to be considered for determining the best suitable model for last mile connectivity. | (3) |
| 7 | Briefly explain the types of data analysis results. | (3) |
| 8 | Define the term predictive analysis. | (3) |
| 9 | List and explain Raspberry Pi interfaces. | (3) |
| 10 | Write a python program for controlling an LED with a switch using Raspberry Pi. | (3) |

PART B*Answer any one full question from each module, each carries 14 marks.***Module I**

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|----|-----------------------------------------------------------------------------------------|-----|
| 11 | a) With a neat diagram, explain the main elements of the oneM2M IoT Architecture. | (8) |
| | b) Illustrate the benefits and impact of IoT in Connected Roadways and Smart Creatures. | (6) |

OR

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|----|----------------------------------------------------------------------|------|
| 12 | a) Write a description on fog computing and edge computing. | (10) |
| | b) Explain about the Simplified IoT Architecture with neat sketches. | (4) |

Module II

- 13 a) Illustrate the LoRaWAN technology as an IoT communication paradigm (10)
b) What is the role of actuators in IoT systems? (4)

OR

- 14 a) Explain about Wireless Sensor Network (WSN) and communication protocols for WSN. (6)
b) Explain the IEEE 802.15.4 standard for wireless communication (8)

Module III

- 15 a) Describe about the Routing Protocol for Low Power and Lossy Networks. (6)
b) Explain SCADA Transport over LLNs with MAP-T. (8)

OR

- 16 a) Detail on supervisory control and data acquisition (SCADA). (6)
b) Explain about optimization under 6LoWPAN. (8)

Module IV

- 17 a) Explain in detail about Hadoop Ecosystem. (6)
b) Explain the "The Purdue Model for Control Hierarchy" and OT network characteristics (8)

OR

- 18 a) Define the concept of neural networks. With a neat diagram explain how neural networks recognise a dog in a photo. (8)
b) Explain any two formal risk analysis structures (6)

Module V

- 19 a) Explain the working of WAMP protocol. (8)
b) Write in detail about Amazon EC2 and Amazon AutoScaling (6)

OR

- 20 a) Explain the Django Architecture. (8)
b) Explain about Amazon RDS and Amazon DynamoDB. (6)
