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SET-A

SRM Institute of Science and Technology

**College of Engineering and Technology**

**School of Computing**

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamil Nadu

**Academic Year: 2024-25 (ODD)**

Test: CLA-T3 Date: 18-07-2024

Course Code & Title: 18CSE447T EDGE COMPUTING Duration: 2 Hours Year & Sem: IV Year / VIII Sem Max. Marks: 50

**Course Articulation Matrix: *(to be placed)***

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| **S.No.** | **Course Outcome** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** | **PSO3** |
| 1 | CO1 | H | L | H | M | H | H | H | H | H | H | M | H | H | H | H |
| 2 | CO2 | H | L | H | M | H | H | H | H | H | H | M | H | H | H | H |
| 3 | CO3 | H | L | H | M | H | H | H | H | H | H | M | H | H | H | H |
| 4 | CO4 | H | L | H | M | H | H | H | H | H | H | M | H | H | H | H |
| 5 | CO5 | H | L | H | M | H | H | H | H | H | H | M | H | H | H | H |
| 6 | CO6 | H | L | H | M | H | H | H | H | H | H | M | H | H | H | H |

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| **Part – A (10 X 1 = 10 Marks)**  **Answer all the questions** | | | | | | |
| **Q.**  **No** | **Question** | **Ma**  **rks** | **BL** | **CO** | **PO** | **\*PI Code** |
| 1 | **What is the primary benefit of using edge analytics in an irrigation system?**  **A. Reduced data transfer costs**  **B. Improved central processing speed**  **C. Decreased sensor lifespan**  **D. Increased manual intervention** | 1 | 2 | 4 | 1,2 | 2.1.1 |
| 2 | **Which of the following data types are commonly used in big data for edge analytics in irrigation systems?**  **A. Structured data**  **B. Unstructured data**  **C. Semi-structured data**  **D. All of the above** | 1 | 2 | 4 | 1,2 | 2.1.2 |
| 3 | **Which data type is typically stored in relational databases and has a fixed schema?**  **A. Structured data**  **B. Unstructured data**  **C. Semi-structured data**  **D. Binary data** | 1 | 2 | 4 | 1,2 | 2.1.1 |
| 4 | **What is the role of machine learning in edge computing for irrigation systems?**  **A. Data collection**  **B. Predictive maintenance**  **C. Data encryption**  **D. None of the above** | 1 | 2 | 4 | 1,2 | 2.1.1 |
| 5 | **Which machine learning technique is often used for predicting soil moisture levels in irrigation systems?**  **A. Linear regression**  **B. K-means clustering**  **C. Support Vector Machines**  **D. Decision trees** | 1 | 1 | 5 | 1,2 | 2.1.1 |

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| 6 | **Which of the following is NOT a characteristic of big data?**  **A. Volume**  **B. Velocity**  **C. Variety**  **D. Value chain** | 1 | 2 | 4 | 1,2 | 2.1.3 |
| **7** | **Cloudera is known for its distribution of which big data framework?**  **A. Apache Spark**  **B. Apache Hadoop**  **C. Apache Kafka**  **D. Apache Flink** | 1 | 2 | 5 | 1,2 | 2.1.1 |
| 8 | **In a hydroponics system, edge analytics can help by:**  **A. Increasing soil fertility**  **B. Monitoring nutrient levels in real-time**  **C. Reducing water evaporation**  **D. Enhancing plant biodiversity** | 1 | 1 | 5 | 1,2 | 2.1.1 |
| 9 | **Which layer in the big data architecture is responsible for collecting raw data from various sources?**  **A. Data Ingestion layer**  **B. Data Processing layer**  **C. Data Storage layer**  **D. Data Visualization layer** | 1 | 2 | 5 | 1,2 | 2.1.2 |
| 10 | **Which of the following is an open-source big data platform?**  **A. Hortonworks**  **B. Oracle**  **C. IBM DB2**  **D. Microsoft SQL Server** | 1 | 2 | 5 | 1,2 | 2.1.2 |

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| **Part – B (4 X 10 = 40 Marks)**  **Answer any 4 questions** | | | | | | |
| **Q.**  **No** | **Question** | **Marks** | **BL** | **CO** | **PO** | **\*PI Code** |
| **11** | **Explain the differences between structured, unstructured, and semi-structured data in the context of big data. Provide real-world examples of each type.** | **10** | **3** | **3** | **1,2** | **2.5.2** |
| **12** | **Describe the five V's of big data and provide examples of how each characteristic impacts data management and analysis.** | **10** | **3** | **3** | **1,2** | **2.5.2** |
| **13** | **Compare and contrast the big data solutions offered by Hortonworks, Cloudera, and MAP R. What are the strengths and weaknesses of each platform?** | **10** | **3** | **4** | **1,2** | **2.7.2** |
| **14** | **Discuss the applications of deep learning in automating hydroponics systems at the edge. Provide examples of specific models and their uses.** | **10** | **3** | **4** | **1,2** | **2.7.2** |
| **15** | **Discuss how machine learning algorithms can be utilized for real-time detection and prediction of water quality issues at the edge.** | **10** | **3** | **4** | **1,2** | **2.7.2** |

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