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| **Course Code:** | | **:** | **AI244AI** | **Date** | **:** | **23-06-2024** | | | |
| **Semester** | | **:** | **IV** | **Time** | **:** |  | | | |
| **Max Marks** | | **:** | **10** | **Duration** | **:** | **20 mins** | | | |
| **Artificial Intelligence and Machine Learning** | | | | | | | | | |
| **Quiz II** | | | | | | | | | |
| **Note: Answer all the Questions** | | | | | | | | | |
| **SL. No** | **Questions** | | | | | | **M** | **BT** | **CO** |
| **1** | One of the parameters used to find the algorithm performance is completeness. When do we say the algorithm is complete? | | | | | | **1** | L3 | CO1 |
| **2** | Mention any one technique to deal with an infinite path problem in DFS. | | | | | | **1** | L3 | CO1 |
| **3** | Which is memory efficient, DFS or BFS? | | | | | | **1** | L2 | CO1 |
| **4** | Differentiate informed and uninformed search techniques. | | | | | | **1** | L3 | CO1 |
| **5** | What are the performance factors that influence the KNN algorithm? | | | | | | **1** | L1 | CO5 |
| **6** | Distinguish between Euclidean distance and Manhattan distance measures in the KNN algorithm. (Formulas, Plot) | | | | | | **1** | L2 | CO1 |
| **7** | A diagnostic test has a probability of 0.95 of giving a positive result when applied to a person suffering from a certain disease and a probability of 0.10 of giving a false positive when applied to a non-sufferer. It is estimated that 0.5% of the population are sufferers. Suppose that a test is administered to a person about whom we have no relevant information relating to the disease (apart from the fact that he/she comes from this population). Calculate the following probabilities.   1. That the test result is positive. 2. That, given a positive result, makes the person a sufferer. | | | | | | **2** | L3 | CO5 |
| **8** | For the problem given in 7, compute the following   1. That given a negative result, the person is a non-sufferer. 2. That the person will be misclassified. | | | | | | **2** | L3 | CO5 |

**M-Marks, BT-Blooms Taxonomy Levels, CO-Course Outcomes**

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| **Marks Distribution** | **Particulars** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **L1** | **L2** | **L3** | **L4** | **L5** | **L6** |
| **Max Marks CIE** |  |  |  |  |  |  |  |  |  |  |  |

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| **Course Outcomes: After completing the course, the students will be able to:-** | |
| **CO1** | Explain and apply AI & ML algorithms to address various requirements of real-world problems. |
| **CO2** | Design and develop AI and ML solutions to benefit society, science, and industry. |
| **CO3** | Use modern tools to create AI and ML solutions. |
| **CO4** | Demonstrate effective communication through team presentations and reports to analyze the impact of AI and ML solutions on society and nature. |
| **CO5** | Conduct Performance evaluation, modeling, and validation of AI and ML solutions benefitting lifelong learning. |

Scheme and Solutions

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| Q. No | Solutions | M |
| 1. | When the algorithm is guaranteed to produce a solution, it is called a complete | 1 |
| 2. | Marking the visited node to avoid loops or putting a limit on the depth | 1 |
| 3. | DFS | 1 |
| 4. | An informed search has some prior information to achieve the direction toward the goal state, whereas an uninformed search is a blind search without any additional information. |  |
| 5. | 1. The distance function or distance metric used to determine the nearest neighbours. 2. The decision rule used to derive a classification from the K-nearest neighbours. 3. The number of neighbours used to classify the new example | 01 |
| 6. | Manhattan: Euclidean: | 01 |
| 7 and 8 |  | 04 |