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**Presidency University**

**Bengaluru**

**School Of Computer Science and Engineering & Information Science**

**Summer term End-Term Examinations, Aug 2024**

**Date**: 06/08/2024

**Time**: 1.00PM-4.00 pm

**Max Marks**: 100

**Weightage**: 50%

**Odd Semester**: 2023 - 24

**Course Code**: CSE3038

**Course Name**: Applied Data Science

**Department: CSE**

**Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

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| **Q.No** | **Questions** | **Marks** | **CO** | **RBT** |
| 1 | a) State any four differences between Data analysis and Data analytics. | 4 | CO1 | L1 |
| b) Create a 2-D numpy array from lists and check its type, size, shape, dimension, type of elements stored. | 6 | CO1 | L2 |
| c) Create a dataframe from a dictionary of lists using pandas and perform following operations:  -Check for missing values  -Fill missing values  -Drop missing values  -Drop rows with at least one null value  -Iterate over rows and columns | 10 | CO1 | L3 |
| OR | | | | |
| 2 | a) Explain reshape and flatten method with respective to numpy arrays with examples. | 4 | CO1 | L1 |
| b) Explain Data science project lifecycle- OSEMN framework with diagram. | 6 | CO1 | L2 |
| c) Perform any ten matrix operations with numpy arrays using python. | 10 | CO1 | L3 |

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| 3 | a) Explain interpolation with an example program. | 4 | CO2 | L1 |
| b) Explain any six data imputation methods. | 6 | CO2 | L2 |
| c) Write a python program to perform descriptive statistics using pandas and numpy. | 10 | CO2 | L3 |

OR

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| 4 | a) What do you mean by feature aggregation? Explain any two methods of feature aggregation. | 4 | CO2 | L1 |
| b) Explain label encoding and one hot encoding with example programs. | 6 | CO2 | L2 |
| c) Write a python program to plot scatter plot, count plot, pair plot for any dataset. (Assume dataset for eg- winequality.csv) | 10 | CO2 | L3 |

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| 5 | a) Explain logistic regression with formula. | 4 | CO3 | L1 |
| b) Explain support vector machine algorithm. How do you get a straight line and a hyperplane? Explain with diagrams. | 6 | CO3 | L2 |
| c) Analyse the profit using simple linear regression for a supermarket store. Also perform data pre-processing. | 10 | CO3 | L3 |

OR

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| 6 | a) Explain the types of support vector machine algorithm. | 4 | CO3 | L1 |
| b) Explain Naive Bayes theorem with formula and example. | 6 | CO3 | L2 |
| c) Write a python program to perform simple logistic regression on a dataset (assume dataset). | 10 | CO3 | L3 |

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| 7 | a) Explain unsupervised machine learning algorithm with diagram. | 4 | CO4 | L1 |
| b) Explain any five techniques of unsupervised machine learning algorithm. | 6 | CO4 | L2 |
| c) Write a python program to perform decision tree classifier on a dataset(assume dataset). | 10 | CO4 | L3 |

OR

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| 8 | a) Explain Hierarchical clustering with example. | 4 | CO4 | L1 |
| b) Explain K-means clustering algorithm with steps and example. | 6 | CO4 | L2 |
| c) Write a python program to perform support vector machine classifier on a dataset(assume dataset). | 10 | CO4 | L3 |

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| 9 | a) Explain elbow method. | 4 | CO1 | L1 |
| b) Explain decision tree algorithm with diagram. | 6 | CO1 | L2 |
| c) Write a python program to perform min-max scaling and standardization using pandas. | 10 | CO1 | L3 |

OR

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| 10 | a) How to create subplots in python? Explain with program. | 4 | CO2 | L1 |
| b) Explain data science project lifecycle- OSEMN framework with diagram. | 6 | CO2 | L2 |
| c) Write a python program to perform Regression based imputation. | 10 | CO2 | L3 |