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| **Sr. No** | **Name Of the Practical** | **Date** | **Signature** |
| **1)** | **Introduction to Excel**  **• Perform conditional formatting on a dataset using various criteria.**  **• Create a pivot table to analyze and summarize data.**  **• Use VLOOKUP function to retrieve information from a different worksheet or table.**  **• Perform what-if analysis using Goal Seek to determine input values for desired output.** |  |  |
| **2)** | **Data Frames and Basic Data Pre-processing**  **• Read data from CSV and JSON files into a data frame.**  **• Perform basic data pre-processing tasks such as handling missing values and outliers.**  **• Manipulate and transform data using functions like filtering, sorting, and grouping.** |  |  |
| **3)** | **Feature Scaling and Dummification**  **• Apply feature-scaling techniques like standardization and normalization to numerical features.**  **• Perform feature dummification to convert categorical variables into numerical representations.** |  |  |
| **4)** | **Hypothesis Testing**  **• Formulate null and alternative hypotheses for a given problem.**  **• Conduct a hypothesis test using appropriate statistical tests (e.g., t-test, chi square test).**  **• Interpret the results and draw conclusions based on the test outcomes.** |  |  |
| **5)** | **ANOVA (Analysis of Variance)**  **• Perform one-way ANOVA to compare means across multiple groups.**  **• Conduct post-hoc tests to identify significant differences between group means.** |  |  |
| **6)** | **Regression and Its Types**  **• Implement simple linear regression using a dataset.**  **• Explore and interpret the regression model coefficients and goodness-of-fit measures.**  **• Extend the analysis to multiple linear regression and assess the impact of additional predictors.** |  |  |
| **7)** | **Logistic Regression and Decision Tree**  **• Build a logistic regression model to predict a binary outcome.**  **• Evaluate the model's performance using classification metrics (e.g., accuracy, precision, recall).**  **• Construct a decision tree model and interpret the decision rules for classification.** |  |  |
| **8)** | **K-Means Clustering**  **• Apply the K-Means algorithm to group similar data points into clusters.**  **• Determine the optimal number of clusters using elbow method or silhouette analysis.**  **• Visualize the clustering results and analyze the cluster characteristics.** |  |  |
| **9)** | **Principal Component Analysis (PCA)**  **• Perform PCA on a dataset to reduce dimensionality.**  **• Evaluate the explained variance and select the appropriate number of principal components.**  **• Visualize the data in the reduced-dimensional space.** |  |  |
| **10)** | **Data Visualization and Storytelling**  **• Create meaningful visualizations using data visualization tools**  **• Combine multiple visualizations to tell a compelling data story.**  **• Present the findings and insights in a clear and concise manner.** |  |  |