Sr. No	Practical List	Sign
1. A B C	**Data Pre-processing and Exploration** Load a CSV dataset. Handle missing values, inconsistent formatting, and outliers. Load a dataset, calculate descriptive summary statistics, create visualizations using different graphs, and identify potential features and target variables Create or Explore datasets to use all pre-processing routines like label encoding, scaling, and binarization.	
2	**Testing Hypothesis** Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a. CSV file and generate the final specific hypothesis. (Create your dataset	
3 A B C	**Linear Models** **Simple Linear Regression** Fit a linear regression model on a dataset. Interpret coefficients, make predictions, and evaluate performance using metrics like R-squared and MSE **Multiple Linear Regression** Extend linear regression to multiple features. Handle feature selection and potential multicollinearity. **Regularized Linear Models** Implement regression variants like LASSO and Ridge on any generated dataset.	
4 A B C D E	**Discriminative Models** **Logistic Regression** Perform binary classification using logistic regression. Calculate accuracy, precision, recall, and understand the ROC curve. Implement and demonstrate k-nearest Neighbor algorithm. Read the training data from a .CSV file and build the model to classify a test sample. Print both correct and wrong predictions. Build a decision tree classifier or regressor. Control hyperparameters like tree depth to avoid overfitting. Visualize the tree. Implement a Support Vector Machine for any relevant dataset. Train a random forest ensemble. Experiment with the number of trees and feature sampling. Compare performance to a single decision tree.	

5	**Generative Models**	
A	Implement and demonstrate the working of a Naive Bayesian classifier using a sample data set. Build the model to classify a test sample.	
B	Implement Hidden Markov Models using hmmlearn	
6	**Probabilistic Models**	
A	Implement Bayesian Linear Regression to explore prior and posterior distribution.	
B	Implement Gaussian Mixture Models for density estimation and unsupervised clustering	
7	**Model Evaluation and Hyperparameter Tuning**	
A	Implement cross-validation techniques (k-fold, stratified, etc.) for robust model evaluation	
B	Systematically explore combinations of hyperparameters to optimize model performance.	
8	**Bayesian Learning** Implement Bayesian Learning using inferences	
9	**Deep Generative Models** Set up a generator network to produce samples and a discriminator network to distinguish between real and generated data.	
10	Develop an API to deploy your model and perform predictions	