

Assignment No. 1

To

classmate

Date

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Q1) compare and contrast supervised and unsupervised learning approaches.

Aspect	Supervised learning	Unsupervised learning
Definition	Machine learning approach that uses labeled data to train model	Machine learning approach that uses unlabeled data to identify patterns
Data	Requires dataset with both features and target labels	Requires only features (X), no target labels
Goal	Learn to map from inputs to outputs to make predictions on unseen data	Discover hidden structures, patterns, or groupings within data
Techniques	Classification, Regression	Clustering, Dimensionality reduction
Output	Predicted labels or numerical values	Groups, clusters or reduced feature dimensions

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example Applications

email Spam Filtering
predicting house prices, diagnosing diseases.customers Segmentation
market basket analysis,
image compression.

Q.2)

State and explain Train Test Split code used to build classifier models.

→ state and explain

Train test split is a method to divide dataset into two parts:

Training set → used to train the model.

Test set → used to evaluate the model's performance on unseen data.

code example

from sklearn.model_selection import train_test_split

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state = 42)

Explanation

code part

meaning

train_test_split

function from scikit learn to split data sets
X = features y = labels

X, y

test_size = 0.2

20% data for testing,
80 % for training

random_state = 42

ensures reproducible
split every run.

x_train, x_test,

y_train, y_test

variables storing
training and test-
ing subset.

use in classifier models

1) Split the data using
train_test_split

2) Train the model with x_train
and y_train

3) Test the model with x_test and
y_test to check accuracy.