6406532240080. **※** *K*⁻¹

6406532240081. \* X<sup>-1</sup>

Question Number: 180 Question Id: 640653668623 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 3** 

Question Label: Multiple Choice Question

Suppose that the 95% of the variance of the data is captured using d-1 eigenvectors. This implies

that

**Options:** 

The features are highly correlated

6406532240082. **\*** (or dependent)

The features have low correlation

6406532240083. **✓** (or independent)

# **MLP**

**Section Id:** 64065344906

Section Number: 12

Section type: Online

Mandatory or Optional: Mandatory

Number of Questions: 23

Number of Questions to be attempted: 23

Section Marks: 50

**Display Number Panel:** Yes

Section Negative Marks: 0

Group All Questions :	No
Enable Mark as Answered Mark for Review and	Yes
Clear Response :	res
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065395196
Question Shuffling Allowed :	No
Is Section Default? :	null
Question Number : 181 Question Id : 640653668	624 Question Type : MCQ Is Question
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0	
Correct Marks : 0	
Question Label : Multiple Choice Question	
THIS IS QUESTION PAPER FOR THE SUBJECT "DIF	PLOMA LEVEL : MACHINE LEARNING PRACTICE
(COMPUTER BASED EXAM)"	
ARE YOU SURE YOU HAVE TO WRITE EXAM FOR T	THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM	THE SUBJECTS TO BE WRITTEN.
(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK	THE SECTION AT THE <u>TOP</u> FOR THE SUBJECTS
REGISTERED BY YOU)	
Options:	
6406532240084. ✔ YES	
6406532240085. * NO	
Sub-Section Number :	2
Sub-Section Id :	64065395197
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number: 182 Question Id: 640653668625 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

You have a dataset of student grades in a Pandas DataFrame called grades\_df.

The columns are: StudentName, Subject, and Score. Consider the following code:

average\_scores = grades\_df.groupby('StudentName')['Score'].mean()

After executing the above code, what will average\_scores contain?

## **Options:**

6406532240086. \* The highest score for each student.

6406532240087. <sup>♣</sup> A list of subjects sorted by their average scores.

6406532240088. ✓ The average score of each student across all subjects.

6406532240089. A DataFrame with the scores of all students for each subject.

Question Number: 183 Question Id: 640653668626 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

You are working on a machine learning project and have received a dataset containing numeric and categorical features. The dataset has some missing values and potential outliers. Given the following data cleaning steps:

- Use One-Hot Encoding for categorical variables.
- 2. Impute missing values with feature's mean for numeric features.
- 3. Remove duplicates.
- 4. Standardize numeric features using Z-score normalization.
- 5. Identify and handle outliers using the IQR method.

Which of the following represents the MOST appropriate sequence for preparing the data for a machine learning model?

#### **Options:**

6406532240090. \*  $1 \rightarrow 4 \rightarrow 2 \rightarrow 3 \rightarrow 5$ 

6406532240091. **\***  $3 \rightarrow 2 \rightarrow 1 \rightarrow 4 \rightarrow 5$ 

6406532240092. **\***  $2 \rightarrow 3 \rightarrow 1 \rightarrow 5 \rightarrow 4$ 

6406532240093.  $\checkmark$  3  $\rightarrow$  5  $\rightarrow$  2  $\rightarrow$  1  $\rightarrow$  4

Question Number: 184 Question Id: 640653668629 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

Correct Marks: 2

Question Label: Multiple Choice Question

You're working with a dataset that consists of training data ('train\_data') and test data ('test\_data'). The dataset contains both numerical and categorical features. You decide to employ a combination of 'StandardScaler' (for numerical columns) and 'OneHotEncoder' (for categorical columns) from 'scikit-learn' using the 'ColumnTransformer' utility. Which of the following actions is MOST likely to introduce data leakage or potential modeling issues?

#### **Options:**

6406532240099. You utilize 'fit\_transform' on 'train\_data' and then 'transform' on 'test\_data' using the 'ColumnTransformer'.

6406532240100. After observing a new category in the test data that was not present in the training data, you set the 'handle\_unknown' parameter to 'ignore' in 'OneHotEncoder'.

6406532240101. ✓ You first apply 'fit' on the 'test\_data' and then 'transform' on 'train\_data' using the 'ColumnTransformer'.

6406532240102. Before using 'ColumnTransformer', you independently apply 'fit\_transform' to 'train\_data' for both 'StandardScaler' and 'OneHotEncoder'.

Question Number: 185 Question Id: 640653668630 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

You are working on a machine learning project that aims to predict housing prices based on various features of the houses. As the first step, you decide to perform exploratory data analysis and visualize the data to understand its structure and relationships. Which of the following visualization techniques or principles is LEAST likely to provide meaningful insights for this kind of regression problem?

#### **Options:**

6406532240103. Plotting a heatmap of the correlation matrix to understand the linear relationship between the numeric features.

6406532240104. Using a scatter plot to visualize the relationship between the square footage of a house and its price.

6406532240105. ✓ Visualizing the distribution of housing prices using a pie chart.

6406532240106. Creating box plots for housing prices, grouped by the number of bedrooms, to detect outliers and understand the distribution across different categories.

Question Number: 186 Question Id: 640653668633 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

What potentially incorrect steps were taken in the following code snippet?

```
from sklearn.datasets import load diabetes
0
     2 from sklearn.model selection import train test split
     3 from sklearn.preprocessing import MinMaxScaler
       from sklearn.linear model import LinearRegression
     5
     6 X,y = load diabetes(return X y=True)
        X train, X test, y train, y test= train test split(X, y, test size=0.2, random state=42)
     7
     8
     9
        mms = MinMaxScaler()
    10
        X train = mms.fit transform(X train)
    11
        X test = mms.fit transform(X test)
    13
    14 lr = LinearRegression()
        lr.fit(X train,y train)
    15
    16
    17
        print("linearRegression R2 Score :", lr.score(X test,y test))
```

8

linearRegression R2 Score : 0.413160707535728

# **Options:**

6406532240109. \* Important parameter in MinMaxScaler was missing while transforming the data.

6406532240110. \* train\_test\_split shouldn't be done while setting random\_state parameter.

6406532240111. ✓ X\_test was transformed incorrectly.

6406532240112. **All the steps are correct** 

Question Number: 187 Question Id: 640653668634 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

Imagine you've loaded a dataset with 1000 samples into a Pandas DataFrame, and each sample has 30 features. Unfortunately, some samples have missing values for a few features, and you want to remove samples with more than 3 null values present. Please select the method to

accomplish this task.?

#### **Options:**

```
6406532240113. ** drop(how= 27)
6406532240114. ** drop(columns=['all'])
6406532240115. ** dropna(thresh = 27)
6406532240116. ** dropna(how='any')
6406532240117. ** dropna(thresh=3)
```

Question Number: 188 Question Id: 640653668635 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

Choose the options with respect to the given statements:

**Statement1 :** To apply various sklearn methods from in series on a column we should use Pipeline.

**Statement2**: To apply various sklearn methods on various columns in parallel we should use ColumnTransformer.

## **Options:**

```
6406532240118. Statement 1 False, Statement 2 False
6406532240119. Statement 1 True, Statement 2 False
6406532240120. Statement 1 False, Statement 2 True
6406532240121. ✓ Both statements are True
```

Question Number: 189 Question Id: 640653668641 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

#### **Correct Marks: 2**

Question Label: Multiple Choice Question

Consider the following code:

Which of the following may be the correct output of the above code?:

#### **Options:**

```
[24 13] [17 25] [25 18] [11 25] [27 23] [27 16]]
[[24 13] [11 25] [22 12] [25 18] [19 18] [27 16]]
[[27 23] [19 18] [11 25] [22 12] [25 18] [17 25]]

[0 7 2 4 3 6], [1 5]
[0 4 5 2 1 6], [3 7]
[3 1 4 5 2 7], [0 6]

[2 0 4 3 1] [6 4 1]
[0 4 7 2 5] [4 0 7]
[5 7 1 0 3] [6 2 5]

6406532240143. * Error in the code block
```

Question Number: 190 Question Id: 640653668643 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

#### **Correct Marks: 2**

Question Label: Multiple Choice Question

Which of the following is likely to be the correct output of the code given below?

```
from sklearn import linear_model
clf = linear_model.Ridge(alpha=0.01)
X= [[1,0], [2, 1], [3, 2]]
y= [1, 2, 3]
clf.fit(X, y)
linear_model.Ridge(alpha=0.01,max_iter=1000, tol=0.0001,fit_intercept=True)
clf.score(X,y)
```

## **Options:**

```
6406532240145. * 5
6406532240146. * 99
6406532240147. ✓ 0.999
```

6406532240148. No evaluation metrics is mentioned, hence it will produce error.

Question Number: 191 Question Id: 640653668644 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

You are working on optimizing a machine learning model for predicting the energy efficiency of buildings. To capture potential non-linear relationships between features like floor area, wall area, and roof area, you decide to introduce polynomial features. However, considering the risk of multicollinearity due to the introduction of these polynomial features, you also want to ensure the data is appropriately scaled. You construct the following pipeline:

```
from sklearn.pipeline import Pipeline
from sklearn.preprocessing import PolynomialFeatures, MinMaxScaler

pipeline = Pipeline([
         ('poly', PolynomialFeatures(degree=2, interaction_only=True)),
         ('scaler', MinMaxScaler())
])
```

Given this setup, which of the following statements accurately describes the operation of this pipeline on the training data?

#### **Options:**

6406532240149. The pipeline will generate polynomial features (including squared terms) and then scale these features to a range between 0 and 1.

6406532240150. The transformed data will consist of the original features, their squares, and interaction terms, all scaled between 0 and 1.

6406532240151. \* The pipeline scales the original features between 0 and 1, then subsequently generates polynomial combinations including both square terms and interaction terms.

6406532240152. ✓ Only interaction terms between features are generated by the pipeline, which are then scaled between 0 and 1, without including the squared terms of individual features.

Question Number: 192 Question Id: 640653668646 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

You're developing a regression model for predicting house prices based on various attributes of a house. Given that some features might be redundant or irrelevant, you consider Lasso regression to help with feature selection. To determine the most appropriate regularization strength  $\alpha$ , you decide to use LassoCV from scikit-learn. Here's a part of your implemented code:

Given the nature of Lasso regression and the purpose of the code, which potential benefit are you hoping to achieve?

## **Options:**

6406532240157.  $\checkmark$  Optimize the model's complexity by automatically determining the best  $\alpha$  through cross-validation.

6406532240158. Reduce overfitting by incorporating 10-fold cross-validation during model

selection.

6406532240159. Make predictions using an ensemble of 10 different Lasso models trained on different subsets of the data.

6406532240160. Maximize the number of features retained in the model, ensuring a complex model representation.

Sub-Section Number: 3

**Sub-Section Id:** 64065395198

**Question Shuffling Allowed :** Yes

Is Section Default?: null

Question Number: 193 Question Id: 640653668647 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 3** 

Question Label: Multiple Choice Question

from sklearn.linear\_model import SGDRegressor

You are working on a regression problem and decide to use the SGDRegressor from scikit-learn. You set up two different regressors with distinct parameter values and train them on the same dataset:

```
# First SGDRegressor
sgd1 = SGDRegressor(max_iter=1000, tol= None, penalty='none')
sgd1.fit(X_train, y_train)

# Second SGDRegressor
sgd2 = SGDRegressor(max_iter=5, tol=None, penalty='none')
sgd2.fit(X_train, y_train)
```

Given the configurations above, which SGDRegressor is more likely to underfit the training data?

#### **Options:**

```
6406532240161. 3 sgd1 6406532240162. 3 sqd2
```

**Sub-Section Number:** 

**Sub-Section Id:** 64065395199

**Question Shuffling Allowed :** Yes

Is Section Default?: null

Question Number: 194 Question Id: 640653668636 Question Type: MSQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time: 0

Correct Marks: 2 Max. Selectable Options: 0

Question Label: Multiple Select Question

Which columns may not be included in the selected data within the code below?

```
from sklearn.feature_selection import VarianceThreshold
data =[[ 95, 0.332, 112, 1, 0.56 ],
                         1,
     [ 146, 0.332, 177,
                              9.2],
     [ -96, 0.332, -139, 1, -0.82 ],
     [ 116, 0.332, 117,
                         1,
                              4.8],
     [ -87, 0.332, -63,
                         1, -1.1 ],
     [ 5, 0.332, 139,
                         1,
                              1.40 ],
     [-142, 0.332, -214,
                         1, -1.31 ],
     [ 148, 0.332, 6,
                         1, -8.6],
     [ 162, 0.332, 34, 1, -6.5 ],
     [ -65, 0.332, -120,
                         1, -8.3],
     [ 197, 0.332, 44, 1, -0.76 ]]
vf = VarianceThreshold(threshold=0)
selected_data = vf.fit_transform(data)
selected_data
```

#### **Options:**

6406532240122. \* Column indexed at 0

6406532240123. V Column indexed at 1

6406532240124. \* Column indexed at 2

6406532240125. V Column indexed at 3

6406532240126. \* Column indexed at 4

6406532240127. \* No columns

Question Number: 195 Question Id: 640653668640 Question Type: MSQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

Correct Marks: 2 Max. Selectable Options: 0

Question Label: Multiple Select Question

Which of the following code blocks will correctly take the learning rate as 'optimal'?

## **Options:**

```
from sklearn.linear_model import SGDRegressor
linear_regressor = SGDRegressor(learning_rate='optimal', eta0=1e-3)

from sklearn.linear_model import SGDRegressor
linear_regressor = (SGDRegressor_learning_rate='adaptive',eta0=1e-2)

from sklearn.model_selection import SGDRegressor
SGD_regressor = LinearRegressor(learning_rate='optimal',eta0=1e-2)

6406532240138. **

None of these
```

**Sub-Section Number:** 5

**Sub-Section Id:** 64065395200

**Question Shuffling Allowed :** Yes

Is Section Default?: null

Question Number: 196 Question Id: 640653668627 Question Type: MSQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Correct Marks: 3 Max. Selectable Options: 0

Question Label: Multiple Select Question

While performing exploratory data analysis (EDA) on a dataset, you come across some columns with a high percentage of missing values. Along with that, a few categorical columns have a large number of unique categories. Which of the following actions would typically be a recommended initial approach during EDA? (Choose multiple correct options.)

#### **Options:**

6406532240094. ✓ Visualizing the data distribution of columns to understand their characteristics.

6406532240095. Substituting dimensionality reduction techniques, like PCA, to handle columns with many unique categories.

6406532240096. ✓ Visualizing the distribution of missing values across the dataset to ascertain any patterns or systematic missingness.

6406532240097. ✓ Removing columns that have more than 90% missing values without any context.

Question Number: 197 Question Id: 640653668645 Question Type: MSQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time: 0

Correct Marks: 3 Max. Selectable Options: 0

**Ouestion Label: Multiple Select Ouestion** 

Given the following code snippet involving GridSearchCV for hyperparameter tuning of a LinearRegression model:

Select all statements that are TRUE given this code snippet:

## **Options:**

The best model chosen by GridSearchCV will be the one that minimizes the negative mean squared error.

With the given param\_grid, the GridSearchCV will evaluate the SGDRegressor model using a total of 4 combinations of hyperparameters to identify the best set for the regression task. 

✓ set for the regression task.

The optimal model will be refit on the entire data after determining the best 6406532240155. 

hyperparameters using cross-validation.

The optimal model will be refit on only a subset of the data after determining the best hyperparameters using cross-validation.

Sub-Section Number: 6

**Sub-Section Id:** 64065395201

**Question Shuffling Allowed:** Yes

Is Section Default?: null

Question Number: 198 Question Id: 640653668628 Question Type: SA Calculator: None

Response Time: N.A Think Time: N.A Minimum Instruction Time: 0

**Correct Marks: 2** 

Question Label: Short Answer Question

Given the following code snippet, how many unique values will be present in the column Z of the resulting DataFrame df?

**Response Type:** Numeric

**Evaluation Required For SA:** Yes

**Show Word Count:** Yes

**Answers Type:** Equal

**Text Areas:** PlainText

**Possible Answers:** 

5

Question Number: 199 Question Id: 640653668631 Question Type: SA Calculator: None

 $\label{lem:ness} \textbf{Response Time: N.A Think Time: N.A Minimum Instruction Time: 0}$ 

**Correct Marks: 2** 

Question Label: Short Answer Question

What will be the output of the following code?

**Response Type:** Numeric

**Evaluation Required For SA:** Yes

**Show Word Count:** Yes

**Answers Type:** Equal

**Text Areas:** PlainText

**Possible Answers:** 

8

Question Number : 200 Question Id : 640653668632 Question Type : SA Calculator : None

Response Time: N.A Think Time: N.A Minimum Instruction Time: 0

**Correct Marks: 2** 

Question Label: Short Answer Question

What will be the output of the following code?

```
from sklearn.preprocessing import MinMaxScaler, StandardScaler

data = [[0, 5],
       [8, 3],
       [3, 4],
       [7, 2],
       [7, 9]]

scaler = StandardScaler()
scaler.fit(data)
print(scaler.var_[0])
```

Response Type: Numeric

**Evaluation Required For SA:** Yes

```
Answers Type: Equal
Text Areas: PlainText
Possible Answers:
9.2
Question Number: 201 Question Id: 640653668648 Question Type: SA Calculator: None
Response Time: N.A Think Time: N.A Minimum Instruction Time: 0
Correct Marks: 2
Question Label: Short Answer Question
 You're using GridSearchCV to optimize a Ridge regression model from scikit-learn.
 Consider the following hyperparameter grid:
  from sklearn.linear_model import Ridge
  from sklearn.model_selection import GridSearchCV
  param_grid = {
      'alpha': [0.001, 0.01, 0.1, 1, 10, 100],
      'fit_intercept': [True, False],
      'solver': ['auto', 'lsqr', 'sag']
  }
  grid_search = GridSearchCV(Ridge(), param_grid, cv=5)
  How many combinations will GridSearchCV evaluate?
Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal
Text Areas: PlainText
Possible Answers:
36
Sub-Section Number:
                                                    7
Sub-Section Id:
                                                    64065395202
Question Shuffling Allowed:
                                                    Yes
```

null

**Show Word Count:** Yes

Is Section Default?:

Question Number: 202 Question Id: 640653668642 Question Type: SA Calculator: None

Response Time: N.A Think Time: N.A Minimum Instruction Time: 0

**Correct Marks: 3** 

**Question Label: Short Answer Question** 

For Linear Regression with equation  $Y=W_0X_0+W_1X_1+W_2X_2+\epsilon$  and given

that  $W_2 = \frac{5}{7} * W_1$  and  $\epsilon = 0$ . What will be the value of the  $W_1$  for the below code?

(Write 3 digits after the decimal)

Where  $X_1$  and  $X_2$  are column1 and column2 respectively and  $W_1$  and  $W_2$  are weights associated to the respected columns while fitting

from sklearn.linear\_model import LinearRegression
X\_train = [[0,0], [2,1.43], [4,2.86], [6,4.29]]
y\_train = [0,1,2,3]
reg = LinearRegression(fit\_intercept=False) #intercept=0
reg.fit(X\_train,y\_train)
print(reg.coef\_[0])

Response Type: Numeric

**Evaluation Required For SA:** Yes

**Show Word Count:** Yes

**Answers Type:** Range

Text Areas: PlainText

**Possible Answers:** 

0.327 to 0.333

Sub-Section Number: 8

**Sub-Section Id:** 64065395203

**Question Shuffling Allowed:** No

Is Section Default?: null

Question Id: 640653668637 Question Type: COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers: (203 to 204)

Question Label: Comprehension

Go through the code snippet given below and answer the given subquestions.

#### **Sub questions**

Question Number: 203 Question Id: 640653668638 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Time: 0

**Correct Marks: 2** 

Question Label: Multiple Choice Question

Which of the following options will be the output of the given code?

#### **Options:**

Question Number: 204 Question Id: 640653668639 Question Type: MCQ Is Question

Mandatory: No Calculator: None Response Time: N.A Think Time: N.A Minimum Instruction

Correct Marks : 2

Question Label: Multiple Choice Question

Which of the following could be the possible output of print(reg.score())?

**Options:** 

6406532240132. \* -0.528

6406532240133. \* 1

6406532240134. \* 0.528

6406532240135. ✓ Given code will return an error

# **Business Analytics**

Yes

**Section Id:** 64065344907

Section Number: 13

Section type: Online

Mandatory or Optional: Mandatory

Number of Questions: 8

Number of Questions to be attempted: 8

Section Marks: 20

**Display Number Panel:** Yes

Section Negative Marks: 0

Group All Questions: No

**Enable Mark as Answered Mark for Review and** 

**Clear Response:** 

Maximum Instruction Time: 0

Sub-Section Number: 1

**Sub-Section Id:** 64065395204

**Question Shuffling Allowed :** No

Is Section Default?: null