import pandas as pd

from sklearn.ensemble import GradientBoostingRegressor

from sklearn.model\_selection import train\_test\_split

# Load the dataset

file\_path = r" " # File path

data = pd.read\_csv(file\_path)

# Define features and target variable

features = ['Temperature', 'Concentration', 'Dose(mol%)'] # Assume these three columns are features

target = 'Response' # Assume this column is the target variable

X = data[features]

y = data[target]

# Split the dataset into training and test sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Create and train the Gradient Boosting Regressor model

model = GradientBoostingRegressor(random\_state=42)

model.fit(X\_train, y\_train)

# Prepare the dataset for prediction conditions

temperature = 260

concentrations = [25, 50, 75, 100, 125, 150, 200]

doping\_levels = [0, 1, 3, 12]

# Create a DataFrame for the prediction conditions

prediction\_data = pd.DataFrame(

[

[temperature, conc, doping]

for conc in concentrations

for doping in doping\_levels

],

columns=features

)

# Use the model to make predictions

predictions = model.predict(prediction\_data)

prediction\_data['Predicted Response'] = predictions

# Output the prediction results

print(prediction\_data)