EX: 11 Implementation of clustering
Date: Techniques K-Means.

Aim:

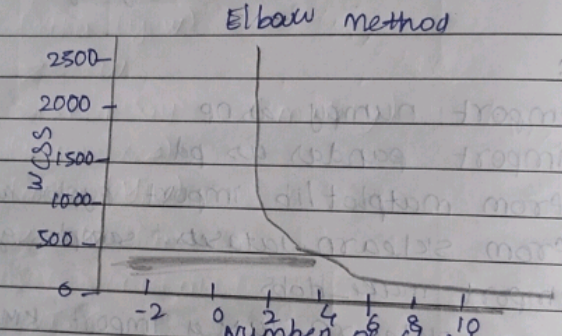
To implement a K-means clustering technique using python language.

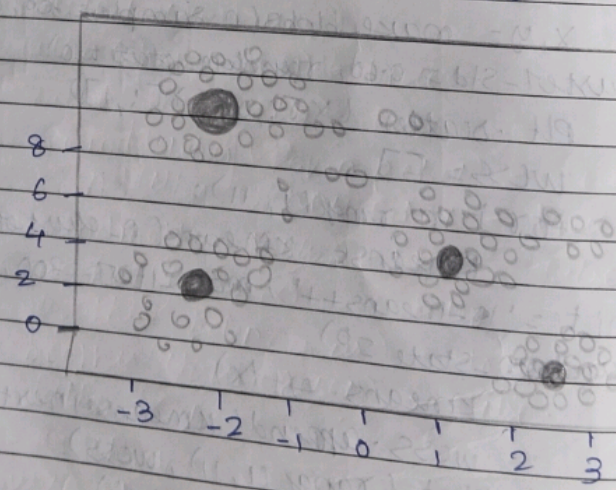
Code:

```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
from sklearn.datasets._samples_generator
import make_blobs
from sklearn.cluster import KMeans
X, y = make_blobs(n_samples=300, centers=4,
cluster_std = 0.60, random_state = 0)
plt.scatter(X[:,0], X[:,1])
wcss = []
for i in range(1, 11):
    kmeans = KMeans(n_clusters=i,
init = 'k-means++', max_iter= 300, n_init=10,
random_state =0)
    kmeans.fit(X)
    wcss.append(kmeans.inertia_)
plt.plot(range(1, 11), wcss)
plt.title('Elbow Method')
plt.xlabel('Number of clusters')
plt.ylabel('wcss')
plt.show()
kmeans = KMeans(n_clusters=4, init='k-
means++', max_iter= 300, n_init = 10, random_state=
0)
```

```
Pred_y = kmeans.fit_predict(X)
plt.scatter(X[:,0], X[:,1])
plt.scatter(kmeans.cluster_centers_[:,0],
kmeans.cluster_centers_[:,1], s=300, c='red')
plt.show()
```

output:




Result:

The program for implementation of clustering Techniques K-means is successfully executed and the output is verified.