**Name :- Shivam Indrabhan Borse**

**Roll No :- 19**

**Subject: Artificial Neural Network (SL - II)**

**Class : TE**

**Branch: AI & DS**

**Practical – 6**

**Problem statement : I**mplement perceptron learning law with its decision regions using python. Give the output in graphical form

**Code :**

import numpy as np

import matplotlib.pyplot as plt

from sklearn.linear\_model import Perceptron

# Generate some random data

np.random.seed(0)

X = np.random.randn(100, 2)

y = np.where(X[:,0] + X[:,1] > 0, 1, -1)

# Train the perceptron classifier

clf = Perceptron(tol=1e-3, random\_state=0)

clf.fit(X, y)

# Plot the decision boundary

xmin, xmax = X[:, 0].min() - 1, X[:, 0].max() + 1

ymin, ymax = X[:, 1].min() - 1, X[:, 1].max() + 1

xx, yy = np.meshgrid(np.arange(xmin, xmax, 0.1),np.arange(ymin, ymax, 0.1))

Z = clf.predict(np.c\_[xx.ravel(), yy.ravel()])

Z = Z.reshape(xx.shape)

plt.contourf(xx, yy, Z, alpha=0.4)

plt.scatter(X[:, 0], X[:, 1], c=y, alpha=0.8)

plt.show()

**OUTPUT :**

