**Artificial Intelligence**

**Assignment-01**

**20066193**

**1.2 Solution:** We know that since one co-ordinate of the x is fixed, the Perceptron is 2 dimensional.

**(a)** The line that divides the hyper-plane is given by

wTx=0

x0w0+x1w1+ x2w2=0 , and since x1 is given as 1

w0+x1w1+ x2w2=0

x2= (-w0-x1w1)/w2 ------(1)

A linear equation of the form y=mx+c ----(2) has a slope m. Writing equation (1) in terms of equation(2) we get

x2  = - (w1/ w2) x1-(w0/ w2)

The slope a is - (w1/ w2) whereas intercept b is -(w0/ w2)

**(b)** For both w=[1 2 3]T and w=-[1 2 3]T the equation of the line becomes

x2  = - (2/ 3) x1-(1/ 3)------(3) . Below we have a plot of linear equation (3)s

