Answers for Question 4:

a)
i)Test Error for Different set of Training Examples

```
C:\Users\srika\OneDrive\Desktop\Fall19\MachineLearning\code>python3 mnist1NNdemo.py
test error
Error Rate: 32.06%

test error
Error Rate: 13.10%

test error
Error Rate: 8.64%

test error
Error Rate: 6.57%

test error
Error Rate: 5.91%

test error
Error Rate: 5.37%

Test Error
[32.06, 13.100000000000001, 8.64, 6.569999999999999, 5.91, 5.37]
Training Examples
[100, 1000, 2500, 5000, 7500, 10000]
```

ii)Cross validation Error for different for n

```
Error Rate: 15.20%

Error Rate: 12.40%

Error Rate: 11.70%

Error Rate: 11.80%

Error Rate: 11.80%

no of folds
[3, 10, 50, 100, 1000]
cross validation error for different n
[15.2, 12.4, 11.700000000000001, 11.799999999999999, 11.799999999999999]
```

Answers for Question 4

b)

i)Training Error for different no of changed values
Plotting the Decision Boundary

```
C:\Users\srika\OneDrive\Desktop\Fall19\MachineLearning\Maganti_665398395\code>python3 iris1NNboundary.py
No of changed labels is 10
Training error rate is 14.000000000000002
No of changed labels is 20
Training error rate is 20.0
No of changed labels is 30
Training error rate is 26.0
No of changed labels is 50
Training error rate is 41.333333333333336
```