Report

1) Lasso Regularisation

```
Alpha       Training Accuracy       Testing Accuracy
1e-07       0.753246753247          0.730769230769
1e-06       0.755411255411          0.725961538462
1e-05       0.753246753247          0.716346153846
0.0001      0.746753246753          0.716346153846
0.001       0.746753246753          0.701923076923
0.01        0.727272727273          0.701923076923
0.1         0.662337662338          0.677884615385
```

Alpha Values	Testing Accuracies
0.1	67.7 %
0.01	70.19 %
0.001	70.19 %
0.0001	71.63 %
0.00001	71.63 %
0.000001	72.60 %
0.0000001	73.08 %

The maximum accuracy is attained at :
Alpha = 0.0000001
Accuracy = **73.08 %**.

2) Ridge Regularisations

```
Alpha       Training Accuracy       Testing Accuracy
1e-07       0.753246753247          0.730769230769
1e-06       0.753246753247          0.730769230769
1e-05       0.755411255411          0.725961538462
0.0001      0.753246753247          0.721153846154
0.001       0.751082251082          0.716346153846
0.01        0.748917748918          0.716346153846
0.1         0.746753246753          0.716346153846
```

Alpha Values	Testing Accuracies
0.1	71.63
0.01	71.63
0.001	71.63
0.0001	72.12
0.00001	72.60
0.000001	73.08
0.0000001	73.08

The maximum accuracy is attained at :
Alpha = 0.0000001
Accuracy = **73.08 %**.

3) Elastic Net Classifier (Lasso and Ridge Combined)

Alpha	l1	Training Accuracy	Testing Accuracy
1e-07	0.2	0.757575757576	0.725961538462
1e-07	0.3	0.757575757576	0.725961538462
1e-07	0.4	0.757575757576	0.725961538462
1e-07	0.5	0.755411255411	0.725961538462
1e-07	0.6	0.755411255411	0.725961538462
1e-07	0.7	0.755411255411	0.725961538462
1e-07	0.8	0.755411255411	0.725961538462
1e-07	0.9	0.753246753247	0.725961538462
1e-06	0.2	0.757575757576	0.711538461538
1e-06	0.3	0.757575757576	0.711538461538
1e-06	0.4	0.755411255411	0.716346153846
1e-06	0.5	0.755411255411	0.716346153846
1e-06	0.6	0.753246753247	0.716346153846
1e-06	0.7	0.751082251082	0.716346153846
1e-06	0.8	0.753246753247	0.716346153846
1e-06	0.9	0.755411255411	0.725961538462
1e-05	0.2	0.746753246753	0.716346153846
1e-05	0.3	0.746753246753	0.716346153846
1e-05	0.4	0.744588744589	0.716346153846
1e-05	0.5	0.744588744589	0.716346153846
1e-05	0.6	0.748917748918	0.716346153846
1e-05	0.7	0.748917748918	0.716346153846
1e-05	0.8	0.746753246753	0.716346153846
1e-05	0.9	0.751082251082	0.716346153846
0.0001	0.2	0.748917748918	0.716346153846
0.0001	0.3	0.748917748918	0.716346153846
0.0001	0.4	0.746753246753	0.716346153846
0.0001	0.5	0.746753246753	0.716346153846
0.0001	0.6	0.746753246753	0.716346153846
0.0001	0.7	0.746753246753	0.716346153846
0.0001	0.8	0.746753246753	0.716346153846
0.0001	0.9	0.746753246753	0.716346153846
0.001	0.2	0.744588744589	0.701923076923
0.001	0.3	0.746753246753	0.701923076923
0.001	0.4	0.746753246753	0.701923076923
0.001	0.5	0.746753246753	0.701923076923
0.001	0.6	0.746753246753	0.701923076923
0.001	0.7	0.746753246753	0.701923076923
0.001	0.8	0.746753246753	0.701923076923
0.001	0.9	0.746753246753	0.701923076923

```
0.01      0.2      0.731601731602          0.692307692308
0.01      0.3      0.733766233766          0.692307692308
0.01      0.4      0.733766233766          0.701923076923
0.01      0.5      0.731601731602          0.697115384615
0.01      0.6      0.735930735931          0.706730769231
0.01      0.7      0.729437229437          0.701923076923
0.01      0.8      0.727272727273          0.697115384615
0.01      0.9      0.720779220779          0.697115384615
0.1       0.2      0.688311688312          0.701923076923
0.1       0.3      0.686147186147          0.697115384615
0.1       0.4      0.692640692641          0.692307692308
0.1       0.5      0.677489177489          0.692307692308
0.1       0.6      0.675324675325          0.682692307692
0.1       0.7      0.662337662338          0.682692307692
0.1       0.8      0.666666666667          0.6875
0.1       0.9      0.662337662338          0.668269230769
```

Statistics:

Alpha	l1	Training Accuracy	Testing Accuracy
1e-07	**0.2**	**0.7576**	**0.726**
1e-07	**0.3**	**0.7576**	**0.726**
1e-07	**0.4**	**0.7576**	**0.726**
1e-07	**0.5**	**0.7554**	**0.726**
1e-07	**0.6**	**0.7554**	**0.726**
1e-07	**0.7**	**0.7554**	**0.726**
1e-07	**0.8**	**0.7554**	**0.726**
1e-07	**0.9**	**0.7532**	**0.726**
1e-06	0.2	0.7576	0.7115
1e-06	0.3	0.7576	0.7115
1e-06	0.4	0.7554	0.7163
1e-06	0.5	0.7554	0.7163
1e-06	0.6	0.7532	0.7163
1e-06	0.7	0.7511	0.7163
1e-06	0.8	0.7532	0.7163
1e-06	0.9	0.7554	0.726
1e-05	0.2	0.7468	0.7163
1e-05	0.3	0.7468	0.7163
1e-05	0.4	0.7446	0.7163
1e-05	0.5	0.7446	0.7163
1e-05	0.6	0.7489	0.7163
1e-05	0.7	0.7489	0.7163
1e-05	0.8	0.7468	0.7163
1e-05	0.9	0.7511	0.7163

1e-04	0.2	0.7489	0.7163
1e-04	0.3	0.7489	0.7163
1e-04	0.4	0.7468	0.7163
1e-04	0.5	0.7468	0.7163
1e-04	0.6	0.7468	0.7163
1e-04	0.7	0.7468	0.7163
1e-04	0.8	0.7468	0.7163
1e-04	0.9	0.7468	0.7163
0.001	0.2	0.7446	0.7019
0.001	0.3	0.7468	0.7019
0.001	0.4	0.7468	0.7019
0.001	0.5	0.7468	0.7019
0.001	0.6	0.7468	0.7019
0.001	0.7	0.7468	0.7019
0.001	0.8	0.7468	0.7019
0.001	0.9	0.7468	0.7019
0.01	0.2	0.7316	0.6923
0.01	0.3	0.7338	0.6923
0.01	0.4	0.7338	0.7019
0.01	0.5	0.7316	0.6971
0.01	0.6	0.7359	0.7067
0.01	0.7	0.7294	0.7019
0.01	0.8	0.7273	0.6971
0.01	0.9	0.7208	0.6971
0.1	0.2	0.6883	0.7019
0.1	0.3	0.6861	0.6971
0.1	0.4	0.6926	0.6923
0.1	0.5	0.6775	0.6923
0.1	0.6	0.6753	0.6827
0.1	0.7	0.6623	0.6827
0.1	0.8	0.6667	0.6875
0.1	0.9	0.6623	0.6683

Maximum accuracy = **72.6 %**

At :

Alpha = 1e-07

L1_ratio = 0.2,0.3,0.4,0.5,0.6,0.7,0.8,0.9

4) No Regularisation (Linear Regression Classifier)

```
Training Accuracy :   0.753246753247
Testing Accuracy :   0.730769230769
```

Training Accuracy = **75.32 %**.
Training Accuracy = **73.08 %**.