SCHOOL OF ENGINEERING
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067

EN-502 (Machine Learning)

Assignment – 1

Question 1:

For the following data set, build a decision tree using the rules based on **Information Theory** and **Gini Index**.

P	Q	R	S	T	Class
Y	Y	M	Y	A	Y
N	N	F	Y	A	X
Y	Y	F	Y	B	Z
Y	Y	F	Y	A	Z
N	Y	F	Y	B	Z
Y	N	M	N	B	Y
N	N	M	N	B	Y
Y	N	F	Y	A	X
N	N	F	Y	B	X
N	Y	F	Y	A	Z

Also, use **Naïve Bayes** classification technique to compute the class for the following data:

a) (Y, N, F, N, B)
b) (N, Y, M, Y, A)

Note: The evaluation of the assignment would also include viva-voce examination on Classification.

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Assignment – 2

Question 1:

For the following data set with Age, Marks1, Mark2 and Mark3 as attributes, determine the clusters using ***K*-Means** clustering technique using Manhattan Distance, where *K*=3 and consider

a) *S1*, *S2* and S3 as seeds.

b) *S8*, *S9* and *S10* as seeds

Student	Age	Marks1	Marks2	Marks3
S1	18	73	75	57
S2	18	79	85	75
S3	23	70	70	52
S4	47	75	76	77
S5	19	91	90	89
S6	20	70	65	60
S7	20	55	55	55
S8	19	82	82	60
S9	21	53	56	59
S10	22	85	86	87

Also, determine clusters using **Agglomerative** and **Divisive** Hierarchical Clustering.

Note: The evaluation of the assignment would also include viva-voce examination on Clustering.

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Assignment – 3

Question:

For the following transactional data set, determine the frequent item sets and association rules with 30% support and 80% confidence using **Apriori** algorithm and **FP Growth** algorithm.

TID	ITEMS
1	Q S T U
2	P Q R S U
3	P Q S V
4	P R U
5	Q R U
6	P R S
7	Q R S
8	P Q R S

Note: The evaluation of the assignment would also include viva-voce examination on Association Rule Mining.