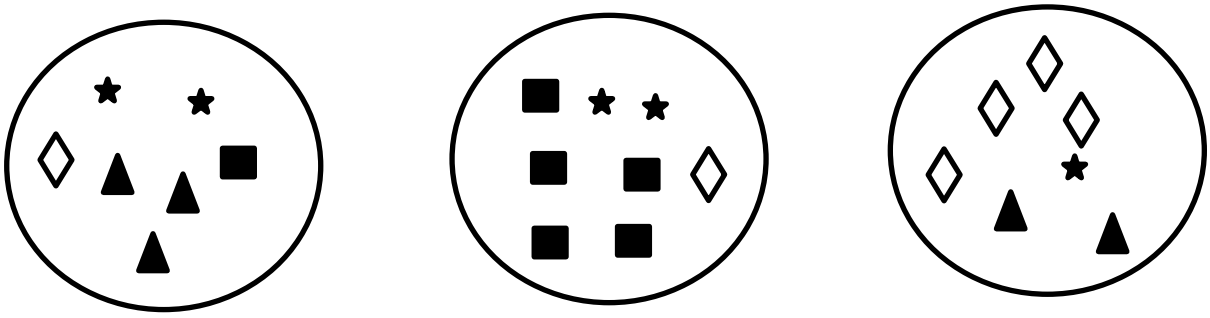
Name _____ Roll No _____ _____
Section

National University of Computer and Emerging Sciences, Lahore Campus

Course:	Information Retrieval	Course Code:	CS317
Program:	BS(Computer Science)	Semester:	Fall 2018
Duration:	25 Minutes	Total Marks:	10
Paper Date:	30-Nov-18	Weight	3.3%
Section:	B	Page(s):	2
Exam:	Quiz 3	Roll No:	

Q1) Compute rand index of following clusters. There are 4 classes of data. [7 Marks]



Cluster 1 Cluster 2 Cluster 3

Solution:

All pairs = 22 choose 2 = 22! / (2! * 20!) = (22 * 21) / 2 = 231

TP + FP = (7 choose 2) + (8 choose 2) + (7 choose 2) = 21 + 28 + 21 = 70

TP = (3 + 1) + (10 + 1) + (6 + 1) = 22

FP = 70 – 22 = 48

FN = (3*2) + (1 + 4 + 4) + (4 + 2 + 2) + (5) = 6 + 9 + 8 + 5 = 28

TN = 231 – 28 – 70 = 133

RI = (TP + TN) / (TP + FP + TN + FN) = (22 + 133) / 231 = 0.67

Q2) If a document has same minimum distance with more than one centroid then it is called a tie. Should we assign the document to any of one the centroid? Why is it important to break ties consistently in K means? [3 Marks]

Solution:

No, we should break ties consistently. Otherwise the document might be assigned to different cluster in each iteration and the algorithm might never converge.