clustering:

Agglomerative Algo : Single link

Sample No.	x	y
P1	0.40	0.53
P2	0.22	0.38
P3	0.35	0.32
P4	0.26	0.19
P5	0.08	0.41
P6	0.45	0.30

To compute distance matrix :

$$d[(x,y)(a,b)] = \sqrt{(x-a)^2 + (y-b)^2}$$

$$d(P_1, P_2) = \sqrt{(0.4-0.22)^2 + (0.53-0.38)^2} = 0.23$$

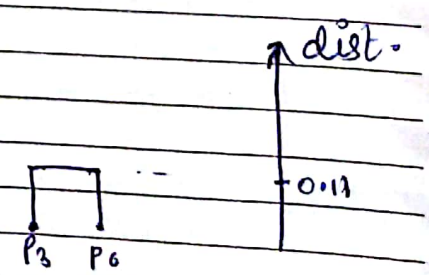
Initially each point is a cluster

distance matrix is:

	P_1	P_2	P_3	P_4	P_5	P_6
P_1	0					
P_2	0.23	0				
P_3	0.22	0.15	0			
P_4	0.37	0.20	0.15	0		
P_5	0.34	0.14	0.28	0.29	0	
P_6	0.23	0.25	0.11	0.22	0.39	0
	P_1	P_2	P_3	P_4	P_5	P_6

min

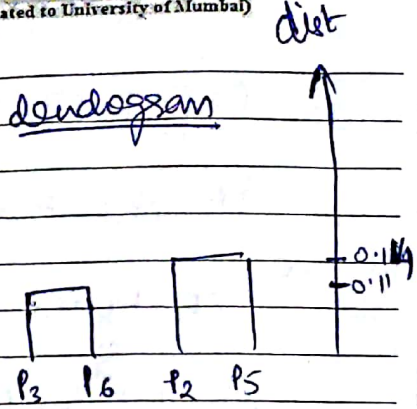
Dendogram



Merge P_3 & P_6 in the same cluster. {min distance}

P_1	0				
P_2	0.24	0			
(P_3, P_6)	0.22	0.15	0		
P_4	0.37	0.20	0.15	0	
P_5	0.34	0.14	0.28	0.29	0
	P_1	P_2	(P_3, P_6)	P_4	P_5

dendogram



$dist[(P_3, P_6), P_1] = \min[dist(P_3, P_1), dist(P_6, P_1)]$
$= \min(0.22, 0.23)$ // original table
$= 0.22$

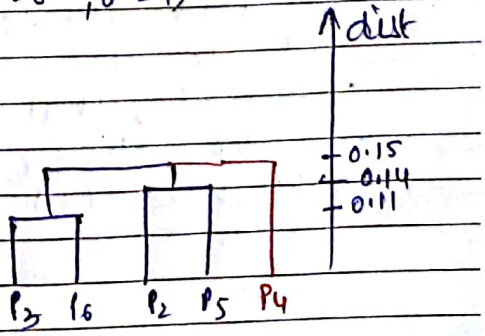
→ Merge P_2 & P_5

P_1	0			
(P_2, P_5)	0.24	0		
(P_3, P_6)	0.22	0.15	0	
P_4	0.37	0.20	0.15	0
	P_1	$(P_2 P_5)$	$(P_3 P_6)$	P_4

choose either one (~~0.15~~) 0.15
Lets choose $(P_2 P_5)$ & $(P_3 P_6)$

$dist((P_2 P_5), (P_3 P_6)) = \min[d(P_2 P_3), d(P_2 P_6), d(P_3 P_5), d(P_5 P_6)]$
$= \min(0.15, 0.25, 0.28, 0.39)$
$= 0.15$

P_1	0		
$(P_2 P_3 P_5 P_6)$	0.22	0	
P_4	0.37	0.15	0
	P_1	$P_2 P_3 P_5 P_6$	P_4



Dendogram

Merge P_4 & $P_2 P_3 P_5 P_6$