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(Answer)

Sample	x	y
(A) P1	4	5
(B) P2	2	3
(C) P3	4	3
(D) P4	3	4
(E) P5	5	6
(F) P6	8	5

k-means clustering ( $k=2$ )

$k=2$

S1: A : 4, 5

F : 8, 5

• For B :-

$$AB = \sqrt{8}$$

$$BF = \sqrt{40}$$

$\therefore$  B joins A  $\Rightarrow$  P2  $\rightarrow$  P1

S2: AB : 3, 4

F : 8, 5

• For C :-

$$ABC = \sqrt{2}$$

$$FC = \sqrt{20}$$

$\therefore$  C joins AB  $\Rightarrow$  P3  $\rightarrow$  P1, P2

S3: ABC : 3.5, 3.5

F : 8, 5

• For D :-

$$ABCD = \sqrt{0.5}$$

$$FD = \sqrt{26}$$

$\therefore$  D joins ABC  $\Rightarrow$  P4  $\rightarrow$  P1, P2, P3

S4: ABCD : 3.25, 3.75

F : 8.5

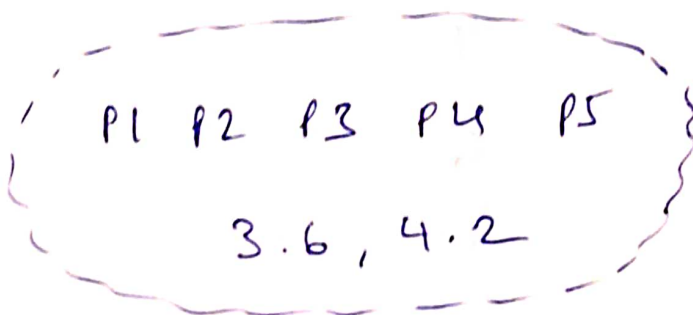
• For E :-

$$ABCE = \sqrt{8.125}$$

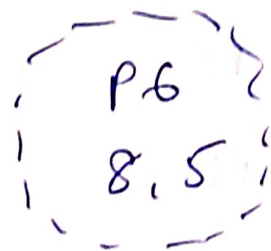
$$FE = \sqrt{10}$$

$\therefore$  E joins ABCD  $\Rightarrow$  P5  $\rightarrow$  P1 P2 P3 P4

Final clusters :-



cluster 1



cluster 2

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( Amt 2 )

Sample	x	y
P1	4	5
P2	2	3
P3	4	3
P4	3	4
P5	5	6
P6	8	5

Single Link technique :-

	P1	P2	P3	P4	P5	P6
P1	0					
P2	2.828	0				
P3	2	2	0			
P4	1.414	1.414	1.414	0		
P5	1.414	4.243	3.162	2.828	0	
P6	4	6.325	4.472	5.099	3.162	0

	P1 P4	P2	P3	P5	P6
P1 P4	0				
P2	1.414	0			
P3	1.414	2	0		
P5	1.414	4.243	3.162	0	
P6	4	6.325	4.47	5.099	

• P1 P2 P4 P3 P5 P6

P1 P2 P4	0				
P3	$\overline{1.414}$	0			
P5	1.414	3.162	0		
P6	4	4.47	5.09	0	

• P1 P2 P3 P4 P5 P6

P1 P2 P3 P4	0				
P5	$\overline{1.414}$	0			
P6	4	3.162	0		

• P1 P2 P3 P4 P5 P6

P1 P2 P3 P4 P5	0				
P6	$\overline{3.162}$	0			

Final Dendrogram:-

