MIT2020029

Ans => 1)

X	Y	$X-\bar{X}$	$Y-\bar{Y}$	$(X-\bar{X})^2$	$(Y-\bar{Y})^2$
2006	18	-2	-16.4	4	32.8
2007	25	-1	-9.4	1	9.4
2008	35	0	0.6	0	0
2009	43	1	8.6	1	8.6
2010	51	2	16.6	4	33.2
				10	84

Also =

$\bar{x} = 2008$, $\bar{y} = 34.4$

Also $y = bx + a$

$$b = \frac{(y-\bar{y})^2}{(x-\bar{x})^2} = 8.4$$

$$a = \bar{y} - b\bar{x} = 34.4 - (8.4 * 2008)$$

$$= -16832.8$$

(a) line of regression :-

$$\boxed{y = 8.4x - 16832.8}$$

(b) Given Year = 2013

Sales = $y = 8.4 * 2013 - 16832.8$

$$\boxed{= 76.4}$$

Ques => 5)

Ans =

(1) Single link clustering -: In this clustering, the similarity of thier most similar members. The single-link merge criterion is local. We pay attention. Solely to the area where 2 clusters come closest to each other.

(2) Complete - link clustering -: the similarity of 2 clusters is the similarity of thier most un-similar members.

Solution -:

	A	B	C	D	E
A	0	1	2	2	3
B		0	2	4	3
C			0	1	5
D				0	3
E					0

Avg link -:

Distanse b/w A and B = 1 is minimum we cluster A and B (as) C1.

We need to update the distanse using the following formular

$$\boxed{\frac{d_A + d_B}{2}}$$

(3)

	C1(A,B)	C	D	E
C1(A,B)	0	2	3	3
C		0	1	5
D			0	3
E				0

Distanse C–D is minimum (1)
Hense 2nd cluster will be (C,D).

	C1(A,B)	C2(C,D)	E
C1(A,B)	0	2.5	3
C2(C,D)		0	4
E			0

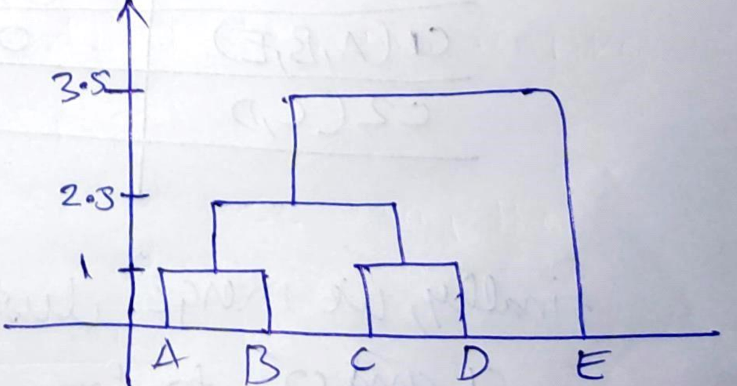
Distance b/w clusters C1 and C2 = 2.5 which is minimum. Hence, we merge

	C1(A,B,C,D)	E
C1(A,B,C,D)	0	3.5
E		0

Finally, we merge C1 with E to form 1 complete clusters.

C=(A,B,C,D,E)

(#) dendogram



Complete Link :-

Distance b/w A and B is minimum = 1

- Hence we make cluster C1(A,B)

Update distance as $\max(d_1, d_2)$:

	C1(A,B)	C	D	E
C1(A,B)	0	2	4	3
C		0	1	5
D			0	3
E				0

Distance b/w C and D is minimum(=1). Hence two make another cluster C2(C,D).

	C1(A,B)	C2(C,D)	E
C1(A,B)	0	4	3
C2(C,D)		0	5
E			0

Distance b/w C1 and E is minimum. Hence we clustem them together.

	C1(AB,E)	C2(C,D)
C1(A,B,E)	0	max(4,5)=5
C2(C,D		0

Finally, we merge clusters C1 and C2 to form the final cluster.

C=(A,B,E,C,D)