National University of Computer and Emerging Sciences, Lahore Campus

Course:	Artificial Intelligence	Course Code:	AI-2002
Program:	BS(Computer Science)	Semester:	Spring 2023
Duration:	40 Minutes	Total Marks:	10
Paper Date:	4-May-23	Weight	0 %
Section:	C/D	Page(s):	1
Exam:	Quiz 4	Roll No.	

Instruction/Notes:

- There are 2 questions. Attempt all questions.
- Provide your solution on this sheet. You may use an extra page for rough work.

	A	B	C	D	E	F
A	0					
B	0.12	0				
C	0.51	0.25	0			
D	0.84	0.16	0.14	0		
E	0.28	0.77	0.70	0.45	0	
F	0.34	0.61	0.93	0.20	0.67	0

Problem#1 (CLO-3)

Apply Nearest Neighbor clustering on the given data. Threshold=0.2.

K1 = {A}

d(B,A) = 0.12<t

K1 = {A,B}

d(C,A) = 0.51>t, d(C,B) =0.25 >t

K1 = {A,B}

K2= {C}

d(D,A) = 0.84>t, d(D,B)= 0.16<t, **d(D,C)= 0.14<t**

K1 = {A,B}

K2= {C,D}

d(E,A) = 0.28>t, d(E,B)= 0.77>t, d(E,C)=0.70>t, d(E,D)=0.45>t

K1 = {A,B}

K2= {C,D}

K3 = {E}

d(F,A) = 0.34>t, d(F,B)= 0.61>t, d(F,C)=0.93>t, **d(F,D)=0.20<t**, d(F,E)=0.67>t

K1 = {A,B}

K2= {C,D,F}

K3 = {E}

Problem#2 (CLO-3)

Apply Algomerative Clusterng (Single link) on the given data. Show the Cluster dendrogram as well.

k	**d**	**Clusters**
6	0	A,B,C,D,E,F
5	0.12	{A,B}, C,D,E,F
4	0.14	{A,B},{C,D}, E, F
3	0.16	{{A,B},{C,D}},E,F
2	0.2	{{{A,B},{C,D}},F},E
1	0.28	{{{{A,B},{C,D}},F},E}