PRN:		Course Code :	MCA2052

Second Year **M.C.A** End Semester Examination Winter 2022

Pattern Recognition Techniques and Applications

Day and Date: Wed. 21.12.22 Max Marks: **100**

Time : 10.30am -1.30pm Duration: **03** hrs

Instructions: All questions are compulsory.
Use of calculator is allowed.
Q1.a) and Q2 a) is compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following**			
	a)	Explain how data mining is useful in different fields.	08	L2	CO2
	b)	Classify descriptive tasks of data mining.	08	L2	CO2
		OR			
	b)	List different issues of data mining.	08	L4	CO4
Q.2		**Attempt the following**			
	a)	Solve following using complete linkage agglomerative method.	08	L3	CO2

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

	b)	Identify steps in preprocessing of data in clustering.	08	L3	CO2
		OR			
	b)	List applications of clustering in different fields.	08	L4	CO2
Q.3		**Attempt any two from the following**			
	a)	Discover working of unsupervised machine learning.	08	L4	CO2
	b)	Explain reinforcement machine learning technique.	08	L2	CO2
	c)	Identify applications of machine learning.	08	L3	CO2
Q.4		**Attempt any two from the following**			
	a)	Identify fundamental steps of image processing.	08	L3	CO2
	b)	Summarize filters used in frequency domain.	08	L2	CO2
	c)	Apply histogram equalization on 3 bit image (L=8) of size 64 X 64 pixels. The intensity distribution of the image is given below.	08	L3	CO2

Intensity level(r_k)	0	1	2	3	4	5	6	7
No. of pixels(n_k)	790	1023	850	656	329	245	122	81

ESE

Q.5 **Attempt any Two of the following**

a)	Distinguish parametric and non parametric approach.	09	L4	CO2
b)	Explain K Nearest Neighbor algorithm.	09	L5	CO2
c)	Solve the problem using naïve Bayes classifier. **Problem**: If the weather is sunny, then the player should play or not?	09	L3	CO2

	Outlook	Play
0	Rainy	Yes
1	Sunny	Yes
2	Overcast	Yes
3	Overcast	Yes
4	Sunny	No
5	Rainy	Yes
6	Sunny	Yes
7	Overcast	Yes
8	Rainy	No
9	Sunny	No
10	Sunny	Yes
11	Rainy	No
12	Overcast	Yes
13	Overcast	Yes

Q.6 **Attempt any Two of the following**

a)	Explain perceptron algorithm for single output unit.	09	L5	CO3
b)	Discuss working of fuzzy set theory.	09	L6	CO3
c)	Elaborate working of Hebbnet.	09	L6	CO3

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