



Answer the following questions

First question

1. Define: Misclassification error – sequential analysis – clustering – association rule.
2. Discuss the steps of the data mining process and the strategies of success.

Second question

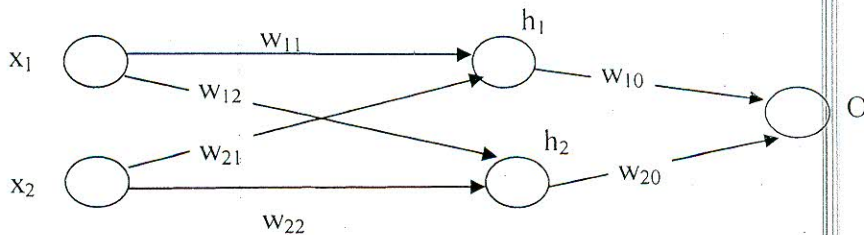
1. Explain linear discriminant analysis for classification when $p = 1$.
2. Show how we use the k nearest neighbor algorithm for regression.

Third question

1. Deduce the confidence interval for accuracy of a decision tree model.
2. Show the difference between supervised and unsupervised learning.

Fourth question

Given the following neural network consisted of input, hidden, and output layers:



Compute the modified weights if $x_1 = 0, x_2 = 1, w_{11} = w_{22} = w_{10} = w_{20} = 1, w_{12} = w_{21} = 0, t$ (target)=1, η (learning rate) = 1

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With my best wishes

TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF MATHEMATICS

EXAMINATION FOR SENIORS STUDENTS (FOURTH YEAR) STUDENTS OF COMPUTER SCIENCE

COURSE TITLE: TIME SERIES

COURSE CODE: ST4204

E:23-5-2015 JON,... TERM:SECOND TOTAL ASSESSMENT MARKS:100 TIME ALLOWED: 2 HOURS

Answer the following questions(each question of 20 marks):

1- A- Define: 1- Irregular variation 2- Cyclic variation

B- Deduce the parameters estimates \hat{a} , \hat{b} for the exponential trend model $y = ae^{bt}$.

2- For the following data calculate the quadratic model and the trend value of 1990 :

t	1980	1981	1982	1983	1984
y	12	10	11	13	9

3- A - Using the method of semi average to obtain the trend values for the following data by taking the average as the mean :

year	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
data	9.74	9.26	8.86	8.25	7.81	8.01	7.55	7.24	7.01	6.88	7.03

B -Consider the following data:

time	1990	1991	1992	1993	1994	1995	1996
sales	2	4	7	1	2	3	5

1-Obtain the fourth order moving average. 2- Find the third order moving median.

4- For the following data calculate the seasonal index and the adjusted data:

season	1994	1995	1996
Summer	6.2	6.5	6.4
Winter	8.1	7.9	8.3
Autumn	8	8.2	7.9
Spring	7.2	7.7	7.5

5- Calculate the weighted index number for the following data :

item	1995		2000	
	price	quantity	price	quantity
A	2	20	3	21
B	18	3	36	2
C	3	18	4	23

EXAMINERS

PROF. DR./

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With my best wishes

