JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2023

B.Tech-VI Semester (IT)

COURSE CODE(CREDITS): 18B11CI613 (3)   MAX. MARKS: 35

COURSE NAME: Data Mining

COURSE INSTRUCTORS: Dr. Pardeep Kumar   MAX. TIME: 2 Hours

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1. Consider the weather data set given below:

Outlook	Temperature	Humidity	Windy	Play
Sunny	Hot	High	False	No
Sunny	Hot	High	True	No
Overcast	Hot	High	False	Yes
Rainy	Mild	High	False	Yes
Rainy	Cool	Normal	False	Yes
Rainy	Cool	Normal	True	No
Overcast	Cool	Normal	True	Yes
Sunny	Mild	High	False	No
Sunny	Cool	Normal	False	Yes
Rainy	Mild	Normal	False	Yes
Sunny	Mild	Normal	True	Yes
Overcast	Mild	High	True	Yes
Overcast	Hot	Normal	False	Yes
Rainy	Mild	High	True	No

Predict the humidity for the information {Outlook= Sunny, Temperature=Hot, Windy=False, and Play=No}   [CO4]   [10]

Q2. Consider a shopping mall basket as shown below:
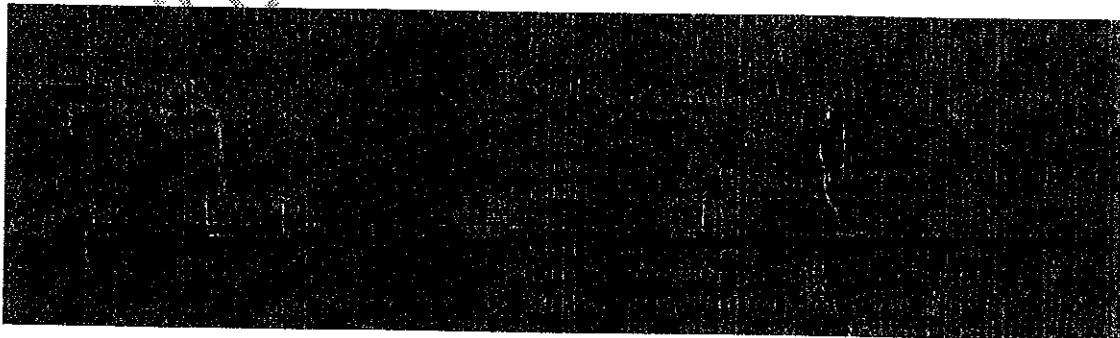
Let the minimum support is 30% and minimum confidence is 80%. Generate the information using Apriori algorithm to describe the behavior of customers. How such information is helpful to raise CRM (Customer Relationship Management) of the shopping mall.   [CO 6] [10+2]

Q3. Consider the given below feed forward neural network:
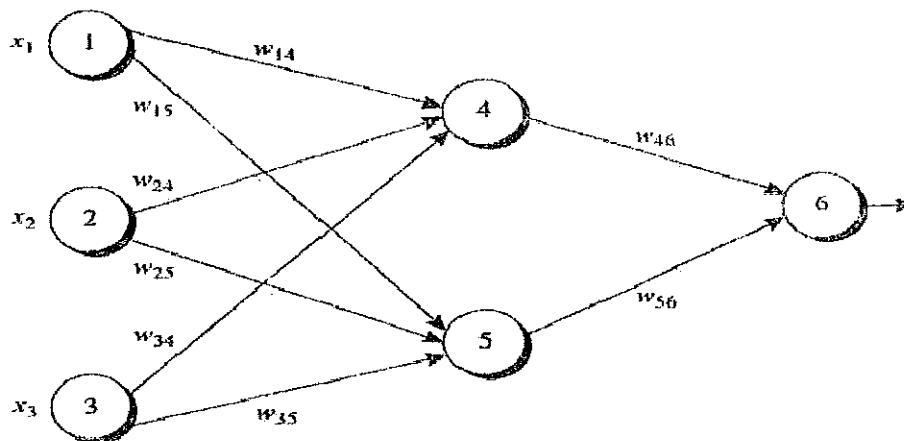
The initial input, weights and biases are given as follows:

Initial Input, Weight, and Bias Values

x_1	x_2	x_3	w_{14}	w_{15}	w_{24}	w_{25}	w_{34}	w_{35}	w_{46}	w_{56}	θ_4	θ_5	θ_6
1	0	1	0.2	0.3	0.4	0.1	0.5	0.2	0.3	0.2	0.4	0.2	0.1

The learning rate is 0.9. The target output is 1 for the given tuple {1,0,1}. Do the dry run for back propagation learning mechanism by considering the above ANN. Also write the pseudo code of back propagation algorithm and discuss its complexity.   [CO-6] [7+3]

Q4. Why ANNs are immune to noise? What is the significance of bias at hidden and output layer?   [CO-6]   [1+2]