

JAYPEE UNIVERSITY OF INFORMATRION TECHNOLOGY, WAKNAGHAT

T-3 EXAMINATION-DECEMBER 2017

M.Tech. III Semester

COURSE CODE: 13M1WCI331

MAX. MARKS: 35

COURSE NAME: Machine Learning

COURSE CREDITS: 3

MAX. TIME: 2 HRS

Note: All questions are compulsory.

1. Consider 8 persons showing interest in personal loan from a reputed public sector bank. Let point(x,y,z) represents their age(in years), salary(in Indian rupees) and income from other sources(in Indian rupees). So the data is represented as Ram(20,35K,10K), Sita(30,25K,5K),Laxman(50,20K,12K),Anil(40,20K,2K),Prem(45,50K,15K),Sunil(21,46 K,15K), Sourabh(23,32K,11K) and Meenu(32,27K,13K). The bank manager's task is to check whether the person is rich, medium earning or poor based on the given data. Use k-means clustering algorithm technique based on Euclidean distance to ease manager's task. [10]
2. Consider a shopping mall basket as shown below:

<i>Customer</i>	<i>Items</i>
C1	Milk, egg, bread, chip
C2	Egg, popcorn, chip, beer
C3	Egg, bread, chip
C4	Milk, egg, bread, popcorn, chip, beer
C5	Milk, bread, beer
C6	Egg, bread, beer
C7	Milk, bread, chip
C8	Milk, egg, bread, butter, chip
C9	Milk, egg, butter, chip

Let the minimum support is 50% 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. [10]

PTO.

3. Consider the database of an electronic company shown in the table below:

Sid	Age	income	student	credit-rating	buys-computer
1	youth	high	no	fair	no
2	youth	high	no	excellent	no
3	middle-aged	high	no	fair	yes
4	senior	medium	no	fair	yes
5	senior	low	yes	fair	yes
6	senior	low	yes	excellent	no
7	middle-aged	low	yes	excellent	yes
8	youth	medium	no	fair	no
9	youth	low	yes	fair	yes
10	senior	medium	yes	fair	yes
11	youth	medium	yes	excellent	yes
12	middle-aged	medium	no	excellent	yes
13	middle-aged	high	yes	fair	yes
14	senior	medium	no	excellent	no

Apply Bayesian classification with reference to the tuple $X=(age=youth, income=medium, student=yes, buys_computer=yes)$ to predict the credit ratings of a person's interested in purchase of computers. [10]

4. What do you mean by regression analysis? Derive the mathematical expressions for single and multiple linear and non linear regressions with physical significance to classification and prediction. [5]