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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION- December-2018
M.Tech I & III Semester

COURSE CODE: 13M1WCI331
COURSE NAME: MACHINE LEARNING
COURSE CREDITS: 03

MAX. MARKS: 35

MAX. TIME: Two Hours

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. What do you mean by Artificial Neural Networks? Draw structure of 3 layers feed forward artificial neural network. Explain back propagation neural network algorithm with suitable pseudo code. Why ANNs are known as robust machine learning algorithms? [10]
2. Consider the database of an electronic company shown in the table below:

Sid	Age	income	student	credit-rating	buys-computer
1	20	high	no	fair	no
2	20	high	no	excellent	no
3	40	high	no	fair	yes
4	60	medium	no	fair	yes
5	60	low	yes	fair	yes
6	60	low	yes	excellent	no
7	40	low	yes	excellent	yes
8	20	medium	no	fair	no
9	20	low	yes	fair	yes
10	60	medium	yes	fair	yes
11	20	medium	yes	excellent	yes
12	40	medium	no	excellent	yes
13	40	high	yes	fair	yes
14	60	medium	no	excellent	no

Predict the income of a student with information {age=20, student=yes, credit-rating=fair and buy-computer=yes}. What are zero value problems and how is it resolved? [10]

3. 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(21,46K,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]

4. Compare the following in terms of accuracy, training time and comprehensibility with proper justification: Decision trees and artificial neural networks.

[5]