POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE

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Jaypee Institute of Information Technology, Noida
T2 Examination, Even Semester 2025
B.Tech. 4th Semester

Course Title: Machine Learning Fundamentals **Maximum Time: 1 Hr**
Course Code: 24B41EC212 **Maximum Marks: 20**

CO1	Understand basics of various machine learning and deep learning approaches
CO2	Apply various regression models for typical machine learning applications
CO3	Apply various classification models for typical machine learning applications
CO4	Analyze unsupervised techniques for typical real time applications

Note: Attempt all the questions.

Q1 The logistic regression model that relates the condition of having high LDL cholesterol levels (1 = Yes, 0 = No) to current smoking status (x:1=yes, 0=no) in a random sample of young adult (18-25 yr) is given by:

$$Y = -1.9+0.31x$$

What is the probability of having high cholesterol among the smokers in the sample.

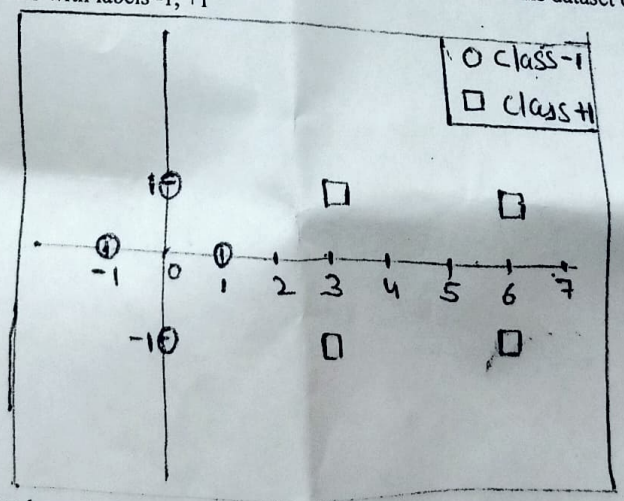
[CO3(Applying), 2 marks]

Q2 The provided dataset consists of 10 data instances with attributes-'CGPA', 'Interactiveness', 'practical knowledge' and 'Communication skills'. The target variable is job offer. Using this dataset, predict whether a student get a job offer or not if he is interactive, has average practical knowledge with CGPA ≥ 9 and has good communication skills.

S.NO	CGPA	Interactiveness	Practical Knowledge	Communication Skills	Job Offer
1	≥9	Yes	Very Good	Good	Yes
2	≥8	No	Good	Medium	Yes
3	≥9	No	Average	poor	No
4	<8	No	Average	Good	No
5	≥8	Yes	Good	Medium	Yes
6	≥9	Yes	Good	Medium	Yes
7	<8	Yes	Good	poor	No
8	≥9	No	Very Good	Good	Yes
9	≥8	Yes	Good	Good	Yes
10	≥8	Yes	Average	Good	Yes

[CO3(Applying), 7 marks]

Q3 Support Vector machine learns a decision boundary leading to the largest margin from both the classes. You are training SVM on a tiny dataset with 8 points in the figure given below. This dataset consists of two examples of two classes with labels -1, +1



Find Weight w and bias b. and draw the optimal hyperplane using them.

[CO3(Applying), 7 marks]

Q4 What are support vectors in SVM? How SVM actually helps to classify linear and Non linear data? Give your explanation with the help of examples, figures etc.

[CO3(Applying), 2 marks]

Q5 What are the different approaches for classification? Name all the algorithms associated with those approaches.

[CO3(Applying), 2 marks]