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Roll Number:

Thapar Institute of Engineering and Technology, Patiala

Computer Science & Engineering Department

B.E Computer Engineering (5<sup>th</sup> Semester)

UML501: Machine Learning

24<sup>th</sup> Sept 2019

Time: 2 Hours; MM: 25

Faculty: Parteek Bhatia, Singara Singh

Note: All the Questions are compulsory. Write to the point. Use of scientific calculator is allowed.

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|----|--|---|
| Q1 | Discuss the interpretation of the following model evaluation parameters.<br>(i) Precision<br>(ii) Recall   | 2 |
| Q2 | What do you mean by null hypothesis? Explain with example.   | 2 |
| Q3 | Illustrate the process backward elimination for model building.  | 2 |
| Q4 | What is the need of train test split? How it is performed?   | 2 |
| Q5 | How linear regression model can be tweaked to build a binary classifier? Justify your answer.  | 2 |
| Q6 | How gradient descent is used to solve the linear regression model? Explain this process by framing a mathematical model for the problem statement. | 3 |
| Q7 | How Bayes theorem plays a vital role in building a classifier? Explain the application of Bayes theorem in building a classifier.                  | 3 |
| Q8 | What are the steps need to be followed to calculate P value? How it is helpful to accept or reject a hypothesis?                                   | 4 |
| Q9 | Build a Decision Tree model using Information Gain for below given data set. Make the assumption if any. Show all intermediate steps.              | 5 |

Size	Shape	Weight	Expensive
Big	Square	Heavy	Yes
Small	Triangle	Light	Yes
Small	Square	Light	No
Big	Triangle	Heavy	No
Big	Square	Light	No
Big	Square	Heavy	Yes
Small	Triangle	Light	Yes