Total No. of Questions : 8]

SEAT No. :

P-3662

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T.E. (Computer Engineering) (Semester - II)

HONORS IN DATA SCIENCE

Statistics & Machine Learning

(2019 Pattern) (310503/310262)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***
5) ***Use of Scientific Calculator is permitted.***

Q1) a) Write a short notes on : **[9]**

i) Partial derivative

ii) Multivariate calculus

b) What is the significance of chain rule in calculus? Explain chain rule with suitable Example. **[9]**

OR

Q2) a) Explain what it means for a function to be continuous and differentiable? **[9]**

b) What is the difference between Eigen value and Eigen vector? How do you find the Eigen value of a Eigen vector? **[9]**

Q3) a) List and Explain different types of machine learning. Explain any one model of machine learning? **[9]**

b) Difference between supervised and unsupervised learning? **[8]**

OR

Q4) a) What is machine learning? What are the Issues in Machine Learning? **[9]**

b) Draw and Explain Reinforcement Learning. Explain how does it work? **[8]**

P.T.O.

Q5) a) What are the different Types of Regression model? Explain any one regression type in brief with suitable example? **[9]**

b) Explain cost function and gradient descent terms with respect to linear Regression algorithm? What is the significance of Initialization of weights? **[9]**

OR

Q6) a) What is the role of cross-validation in evaluating a regression model? **[9]**

b) Explain the process of training a regression model using a dataset? **[9]**

Q7) a) What is Decision tree? What is the difference between a classification tree and a regression tree? **[8]**

b) Explain with example hypothesis space search in decision tree learning? **[9]**

OR

Q8) a) What are the different types of Naive Bayes models, such as Gaussian, Multinomial, and Bernoulli? **[8]**

b) What are advantages and disadvantages of NBmodel. What are various Applications of NBmodel? **[9]**