

Total No. of Questions : 8]

SEAT No. :

P-3662

[Total No. of Pages : 2

[6003]-579

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]

