Total No. of Questions : 8]

SEAT No. :

PA-1621

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T.E. (Honours in Artificial Intelligence and Machine Learling)

COMPUTATIONAL STATISTICS

(2019 Pattern) (Semester - I) (310301)

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.***

Q1) a) What is Sensitivity? Explain Types of Statistical Tests. **[8]**

b) Define the following terms. **[4]**

i) Accuracy

ii) Recall

iii) Precision and

iv) F-measure

c) Consider the confusion Matrix given below. Calculate Accuracy, Recall and Precision. **[6]**

Predicted class / Actual class	CAT	Not CAT
CAT	150	10
Not CAT	20	100

OR

Q2) a) State and explain in depth the typical Analysis procedure used in statistical analysis. **[8]**

b) Differentiate the training error vs testing error. **[4]**

c) What is Hypothesis Testing? Comment on type-I and type-II error. **[6]**

Q3) a) Explain hyperparameter Tuning with GridSearchCV. **[8]**

b) State and Explain different Feature Scaling methods. **[9]**

OR

Q4) a) Explain Ridge Regression and Lasso Regression in details. **[8]**

b) Explain three different cross validation Techniques. **[9]**

P.T.O.

Q5) a) Explain chi-square Test for feature selection with example. **[6]**

b) Describe Recursive Feature Elimination with example. **[8]**

c) How does the Variance Thresholding is used for Robust Feature Selection. **[4]**

OR

Q6) a) What is Dimension Reduction? What are benefits of it? Explain different Dimension Reduction techniques. **[10]**

b) Explain with example under-sampling and over re-sampling. **[8]**

Q7) a) Explain Correlation coefficient and Rank Correlation in details. **[8]**

b) What is Multilinear Regression? Explain with Multilinear Regression model in details. **[9]**

OR

Q8) a) Write short notes on Residual Error and Mean Square Error. **[8]**

b) What is Bayes Theorem? Explain Bayes Theorem of conditional probability. **[9]**

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