Total No. of Questions : 8]

SEAT No. :

P546

[Total No. of Pages : 2

[6004]-481
B.E. (Computer Engineering)
MACHINE LEARNING
(2019 Pattern) (Semester - VII) (410242)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***

Q1) a) Explain the following terms with suitable examples. **[6]**

i) Bias

ii) Variance

iii) Under fitting and Over fitting

b) Differentiate between Lasso Regression and Ridge Regression. **[6]**

c) Explain gradient descent algorithm with example. **[6]**

OR

Q2) a) What do you mean by regression? Explain with suitable example. **[6]**

b) Write a short note on : **[6]**

i) MAE

ii) RMSE

iii) R^2

c) What is gradient descent? Compare batch gradient and stochastic gradient descent. **[6]**

Q3) a) Explain with example the variant of SVM, the support vector regression. **[5]**

b) What do you mean by ensemble learning?Differentiate between bagging & boosting. **[6]**

c) What are different variants of multi-class classification? Explain them with suitable example. **[6]**

OR

P.T.O.

Q4) a) Calculate macro average precision, macro average recall and macro average F-score for the following given confusion matrix of multi-class classification. **[6]**

Predictions →

Actual values ↓	A	B	C	D
A	100	80	10	10
B	0	9	0	1
C	0	1	8	1
D	0	1	0	9

b) Write a short note on : **[6]**

i) Random forest.

ii) Adaboost.

c) Discuss K-nearest neighbour algorithm with suitable example. **[5]**

Q5) a) With reference to Clustering explain the issue of "Optimization of Clusters". **[6]**

b) Compare Hierarchical clustering and K-means clustering. **[6]**

c) Explain how a cluster is formed in the density based clustering algorithm. **[6]**

OR

Q6) a) How would you choose the number of clusters when designing a K-Medoid clustering algorithm? **[6]**

b) Write a short note on out lier analysis with respect to clustering. **[6]**

c) Differentiate between K-means and Spectral clustering. **[6]**

Q7) a) What are building blocks of neural network, elaborate? **[5]**

b) Describe characteristics of back propagation algorithm. **[6]**

c) Write a short note on Recurrent neural n/w & convolutional neural n/w. **[6]**

OR

Q8) a) Explain artificial neural n/w based on perception concept with diagram. **[6]**

b) Describe multi-layer neural n/w. Explain why back propagation algorithm is required. **[6]**

c) Discuss any two activation functions with example. **[5]**