

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 →

	A	B	C	D
Actual values ↓				
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]
- Random forest.
  - 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 outlier 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]

