

Total No. of Questions : 8]

SEAT No. :

P6779

[Total No. of Pages : 2

[6181]-404

B.E. (AI & DS)

MACHINE LEARNING

(2019 Pattern) (Semester - VII) (417521)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to right indicate full marks.

- Q1)** a) Apply K-Nearest Neighbor Algorithm (KNN) on following data. Predict the student result for values physics = 6 marks, Chemistry = 8 marks. Consider number of neighbours K = 3 and Euclidean Distance as distance measure. [12]

Physics (marks)	Chemistry (marks)	Results
4	3	Fail
6	7	Pass
7	8	Pass
5	5	Fail
8	8	Pass

- b) Explain support Vector Machine classification algorithm with suitable example. [6]

OR

- Q2)** a) Explain any 4 evaluation measures of Binary classification with example? [6]
- b) Explain construction of multi-classifier. [6]
- i) One Vs. All approach
  - ii) One Vs One approach
- c) Differentiate between Binary - vs - Multiclass Classification. [6]

P.T.O.

**Q3)** a) Explain K - Means clustering algorithm and states the advantages and disadvantages of k-means clustering algorithm. [9]

b) Explain Gaussian mixture model with example. [8]

OR

**Q4)** a) Elaborate need of clustering and explain how the elbow method is used to decide the value of cluster k. [9]

b) Explain Divisive Hierarchical clustering (DHC) algorithm with example. [8]

**Q5)** a) Differentiate the Bagging and Boosting approach of ensemble learning. [6]

b) Explain different types of voting mechanisms in ensemble learning. [6]

c) Explain AdaBoost algorithm in detail. [6]

OR

**Q6)** a) Compare Homogeneous and Heterogeneous ensemble methods. [6]

b) What is the ensemble learning? Explain any two ensemble learning techniques. [6]

c) Explain random forest ensembles with an example. [6]

**Q7)** a) Explain following terms: [8]

i) Markov Property

ii) Bellman Equation

iii) Markov Reward Process

iv) Markov Chain

b) Explain Q-Learning algorithm with an example. [9]

OR

**Q8)** a) What is Reinforcement Learning? Explain the real time applications of reinforcement learning. [8]

b) Explain following terms : [9]

i) Supervised Learning.

ii) Unsupervised Learning.

iii) Reinforcement Learning.

