

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2023

B.Tech-VIII Semester (CSE/IT/ECE/BT-BI)

COURSE CODE(CREDITS): 18B1WCI843 (3)

MAX. MARKS: 35

COURSE NAME: Data Analytics

COURSE INSTRUCTORS: Dr. Rakesh Kanji

MAX. TIME: 2 Hours

Note: All questions are compulsory from Q1 to Q5 . Attempt any 2 from Q6, Q7 and Q8. Marks are indicated against each question in square brackets.

Q1. Choose the correct option

[1+1+1+1+1]

A. Which of the following statement are true with respect to performing noise resistive?

- a) Support Vector Machine
- b) Linear discriminate analysis
- c) Quadratic discriminate analysis
- d) All of the above

[CO1]

B. Which of the following is invalid pair

- a) (Change in sign to Objective function , to deal ill defined objective function)
- b) (Use constraints, to deal ill defined objective function)
- c) (Primal of SVM , maximization problem)
- d) (Linear problem, Neural Network)

[CO2,CO3]

C. Which one is not valid method of optimization

- a) maximization of loss function
- b) maximization dual of loss function
- c) Minimization of linear loss function without steepest descent
- d) none of the above

[CO3]

D. Which of the following is not valid termination condition of gradient optimization procedure, assume f is an objective function. Here x_{i+1} and x_i are successive solution

- a) $\|\nabla f_{x=x_i}\|_2 < \text{threshold}$
- b) $|\nabla f_{x=x_i}| < \text{threshold}$
- c) $|x_{i+1} - x_i| < \text{threshold}$
- d) all of above

[CO1]

E. Which of the fast convergence strategy for some objective function

- a) Steepest descent with all data
- b) Stochastic gradient descent
- c) Mini batch gradient descent
- d) All of above

[CO1]

Q2. Find most important Principal component analysis of given below data. How do you conclude which is best principal component analysis among all? [3+2][CO2, CO3]
Point1=(2,3,2) and Point2=(0,3,2)

Q3. Explain the idea of SVM and derive the objective function. [2+3] [CO2, CO3]

Q4. Why Linear discriminate analysis based on bays classifier could not handle outlier? What is the difference between Linear discriminate analysis and Quadratic discriminate analysis? Show any one of the procedure derivation. [1+2+2] [CO1, CO2, CO3]

Q5. Build a neural network over sigmoid function with 2 hidden layers each with 1 node only. Compute the parameters for Point1=(2,3,2). [7] [CO1, CO2, CO3].

Q6. Why we use back propagation? Why we consider all change in next layer (j) in order to know the change occurred in current layer? [2+ 2] [CO1, CO2, CO4]

Q7. Explain the K-mean algorithm. Why it is not suitable for Unspherical shape and unknown number of clusters? [2+2] [CO1, CO2, CO4]

Q8. Why negative learning parameter is found in steepest descent procedure? Explain pictorially how steepest descent learns decision curve? [2.5+1.5] [CO1, CO2]