Nirma University
Institute of Technology
Additional Test, May 2021
BTech in Computer Science & Engineering
2CSDE53 Information Retrieval Systems

Roll No. _____ Supervisor's Signature with Date _____ :

Time:75 minutes Max. Marks: 35

Instructions:
1. Attempt all questions.
2. Figures to the right indicate full marks.
3. State and make necessary assumptions wherever necessary.
4. Draw neat sketches wherever required.

1. **Answer the following:** **[15]**

   (a) Consider a meta search system with five search systems. They have ranked five documents as follows: [15]

   System 1: a, b, c, d, e

   System 2: a, b, c

   System 3: b, d, a, c, e

   System 4: b, a, c, d, e

   System 5: d, b

   Obtain Borda, reciprocal and Condorcet ranking for these documents. Show all the steps in detail.

2. **Answer the following:** **[12]**

   (a) Apply multinomial naive Bayesian classifier on following training data representing documents using bag of words model. Use Laplacian smoothing to avoid zero probability error and predict the class label for the document : "alpha theta gamma theta". [12]

Document	Bag of words	Class
1	alpha beta gamma	no
2	gamma theta theta	yes
3	omega theta gamma gamma	yes
4	alpha alpha beta	yes
5	beta theta	no

3. **Answer the following:** **[8]**

   (a) Consider following scenarios for IR based search systems. Plot their behavior in terms of Precision-Recall curves and describe the difference among these systems. [8]

   1. As the recall increases, precision also increases
   2. As the recall increases, precision keeps decreasing
   3. As the recall increases, precision remains constant