

**Duration: 3 hrs**

**[Max Marks: 80]**

- N.B. : (1) Question No 1 is Compulsory.  
(2) Attempt any three questions out of the remaining five.  
(3) All questions carry equal marks.  
(4) Assume suitable data, if required and state it clearly.

- 1 Attempt any **FOUR** **[20]**
- a What is opinion mining? List the challenges of opinion mining? **[5]**
  - b What are the types of spamming techniques? Explain any two techniques in detail. **[5]**
  - c Compare Hidden Markovian Models (HMM) with Conditional Random Fields (CRF). **[5]**
  - d Explain N-gram modeling and its applications. **[5]**
  - e What are the challenges of social media mining? **[5]**
- 2 a Explain with block diagram Named Entity Recognition application. **[10]**
- b Discuss any two Distance-based Clustering Algorithms. **[10]**
- 3 a What is Latent Semantic Indexing? What are the benefits of Latent Semantic Indexing? **[10]**
- b Explain the working of opinion spam detection application **[10]**
- 4 a Write a short note on K-NN classifier. **[10]**
- b Explain different data sources and the web usage mining process in detail. **[10]**
- 5 a Explain feature selection techniques for text document classification. **[10]**
- b What are the different types of social media graphs? Explain recommendations using social context in detail. **[10]**
- 6 a Explain the working of web search engine. **[10]**
- b Explain the supervised techniques of sentiment classification. **[10]**
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