

BE Sem 8, Choice Based, R2019-20, C-Scheme, May 2025
Date:- 15/5/2025, Branch- ECS

Time: 3 Hours

Total Marks 80

- N.B:** 1) Question **number 1** is compulsory.
2) Attempt **any three** out of the remaining questions.
3) Assume suitable data if **necessary** and justify the assumptions.
4) Figures to the **right** indicate full marks.

1. Attempt any **FOUR**.

- a) What are the challenges in developing NLP system? [05]
b) Explain different text pre-processing techniques used in NLP. [05]
c) Apply Naive Bayes text classifier to the test document 'Chennai Hyderabad' to check whether it belongs to class 'India' Or class 'England'. The following document collection is given for training: [05]

Doc. No	Text	Class
1	Chennai Mumbai	India
2	Delhi London Hyderabad	England
3	Chennai Kolkata	India
4	Delhi Hyderabad Pune	India
	London Bristol Chennai	England

- d) Perform parsing using simple top down parsing for the sentence "The dogs cried" using the grammar given below: [05]
S->NP VP
NP->ART N
NP->ART ADJ N
VP->V
VP->V NP
e) Compare and contrast stemming and Lemmatization. [05]

2. a) Write the algorithm for Minimum edit distance and compute the minimum edit distance between **SPEED** and **SPACER**. Assume cost of all operations to be 1. Also identify the operation to be performed using backtracking. [10]
b) Explain the following relationships between senses using suitable examples. Hyponym, meronym, Metonymy, Polysemy and zeugma. [10]

3. a) Explain the n-gram language model. [10]
Consider the following Corpus of three sentences
<s> There is a big garden </s>
<s> Children play in a garden </s>
<s> They play inside beautiful garden </s>
Calculate Probability for the sentence "They play in a big Garden" assuming a bi-gram language model.
b) Explain derivational and inflectional morphology with suitable examples. [10]

4. a) What is stemming? Explain Porter stemming algorithm in detail. [10]
b) What are the five types of referring expressions? Explain with examples. [10]
5. a) What do you mean by Word Sense Disambiguation (WSD)? Discuss the dictionary-based approach for WSD. [10]
b) Define discourse and pragmatics analysis. Define the reference resolution problem in detail. [10]
6. Attempt any FOUR
- a) Explain process of Text summarization in NLP. [05]
b) Explain HMM Model with suitable example. [05]
c) Write a short note on WordNet. [05]
d) What is POS tagging? Explain different methods of POS tagging. [05]
e) What is perplexity? How do you measure perplexity of the languages model? Explain with example. [05]
