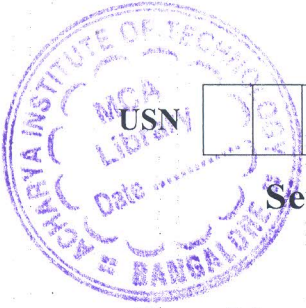


# CBCS SCHEME



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17CS741

## Seventh Semester B.E. Degree Examination, Jan./Feb. 2023 Natural Language Processing

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Explain the issued and processing complexities in NLP. (05 Marks)
- b. Explain the components of transformational grammar with an example. (10 Marks)
- c. With a diagram, explain the components of Governing and Binding. (05 Marks)

OR

- 2 a. Explain the various levels of processing and the types of knowledge it involves. (10 Marks)
- b. Illustrate the bi-gram model by considering the Training Set :  
"The Arabian Knights  
These are the fairy tales of the east  
The stories of the Arabian knights are translated in many languages.  
Test Sentence (s) : The Arabian Knights are the fairy tales of the east. (10 Marks)

### Module-2

- 3 a. Write minimum edit distance algorithm and compute minimum edit distance for tutor and tumour. (07 Marks)
- b. Explain Earley parsing algorithm. (07 Marks)
- c. Explain Rule based Tagger. (06 Marks)

OR

- 4 a. Explain top-down parser and bottom-up parser with a suitable example. (08 Marks)
- b. Interpret Regular expressions and Finite State Automata with an example for each. (08 Marks)
- c. Explain Cocke-Younger-Kasami (CYK) algorithm. (04 Marks)

### Module-3

- 5 a. Explain the shortest path Hypothesis and learning with dependency path in detail. (10 Marks)
- b. Explain with neat diagram the learning frame Architecture. (10 Marks)

OR

- 6 a. Explain the following Indexing services  
i) Document processing  
ii) Clause processing  
iii) Linguistic processing (10 Marks)
- b. Explain Frame semantics and semantics Role labeling in detail. (10 Marks)

### Module-4

- 7 a. Explain the functioning of Word Matching Feedback Systems. (08 Marks)
- b. Discuss iSTART system and their modules. (08 Marks)
- c. Illustrate Topic Models (TM) Feedback system. (04 Marks)

OR

- 8 a. Define:
- i) Cohesion
  - ii) Coh- Matrix
  - iii) Latent Semantic Analysis.
- b. Write a note on various approaches to analyzing texts.

(10 Marks)

(10 Marks)

**Module-5**

- 9 a. Explain design features of information retrieval systems, with a neat diagram. (10 Marks)
- b. Define term weighting. Consider a document represented by the 3 terms {tornado, swirl wind} with the raw tf 4, 1 and 1 respectively. In a collection of 100 documents 15 documents contains the term tornado, 20 contains swirl and 10 contains wind. Find the idf and term weight of the 3 terms. (06 Marks)
- c. Explain the benefits of eliminating stop words. Give examples in which stop word elimination may be harmful. (04 Marks)

OR

- 10 a. List different IR models. Explain classical Information Retrieval models. (10 Marks)
- b. Explain Wordnet and list the applications of Wordnet. (10 Marks)

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