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## Seventh Semester B.E. Degree Examination, Feb./Mar. 2022 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 grammer 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  
Thesè 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. Compute the minimum edit distance between words "tutor" and "tumour". (05 Marks)
- b. Explain the phrase level constructions from synthetic Analysis in detail. (10 Marks)
- c. Explain the Rule based tagger from word level Analysis. (05 Marks)

**OR**

- 4 a. Explain Top-down parsing and Bottom up parsing by considering the sentence as "point the door". (10 Marks)
- b. Apply the Early parsing Algorithm for the sentence "astronomers saw stars with ears" and generate the sequence of states from the given grammer.  

S → NP VP	N → astronomers
NP → NP PP	VP → VP PP
PP → P NP	N → ears
NP → N	P → with
VP → V NP	V → stars
	V → saw

(10 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 (10 Marks)
  - i) Document processing
  - ii) Clause processing
  - iii) Linguistic processing
- b. Explain Frame semantics and semantics Role labeling in detail. (10 Marks)

**Module-4**

- 7 a. Write a note on word matching feedback system. (10 Marks)  
b. Explain Latent Semantic Analysis (LSA) feedback systems. (10 Marks)

**OR**

- 8 a. Explain Cohesion and Coh-matrix in detail. (10 Marks)  
b. Explain sequence model estimation. (10 Marks)

**Module-5**

- 9 a. Explain basic Information retrieval process with diagram. (05 Marks)  
b. Discuss the Boolean model with an example in classical information retrieval model. (10 Marks)  
c. Explain the Applications of Wordnet. (05 Marks)

**OR**

- 10 a. Illustrate the relationship between frequency of words and their rank order in Zipf's law. (05 Marks)  
b. Explain the fuzzy model in Alternative models of IR. (10 Marks)  
c. Explain the Applications of Framenet. (05 Marks)

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