CBCS SCHEME

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18CS743

Seventh Semester B.E. Degree Examination, Dec.2024/Jan.2025
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. Define NLP. List and explain applications of NLP with justification and example. **(10 Marks)**

b. Explain transformational grammar with example. **(10 Marks)**

OR

2 a. Briefly explain various levels of processing with example and types of knowledge it involves. **(10 Marks)**

b. Write the C-structure and F-structure for the following sentence and the CFG roles given below:

"She saw stars"

$S \rightarrow NPVP$

$VP \rightarrow V\{NP\}\{NP\}\ PP^*\ \{S'\}$

$PP \rightarrow P\ NP$

$NP \rightarrow Det\ N\{PP\}$

$S' \rightarrow Comp\ S$ **(10 Marks)**

Module-2

3 a. What is a Finite State Transducer (FST)? Explain FST-based morphological parser with an example. **(10 Marks)**

b. Briefly explain Rule-based stochastic and Hybrid taggers with example. **(10 Marks)**

OR

4 a. Explain Leventhein minimum edit distance algorithm using distance equation in tumour and tutor as an example. **(10 Marks)**

b. Explain Earley parsing algorithm in detail. **(05 Marks)**

c. How this parsing algorithm used to word parse "CSE students like Pizza". **(05 Marks)**

Module-3

5 a. Explain dependency path kernel for relation extraction. **(10 Marks)**

b. With a neat diagram describe the architecture used in the task of learning to annotate cases with knowledge roles. **(10 Marks)**

OR

6 a. Explain the steps used in active learning strategy for acquiring labels from a human annotator compared with NLP **(10 Marks)**

b. With a neat diagram explain the Infact framework functional overview taking appropriate example. **(10 Marks)**

Module-4

7 a. Explain in detail high level representation approach in text mining. Show the steps involved in it. **(10 Marks)**

b. Write a short note with example on :
(i) Word matching feedback systems
(ii) Latent Semantic Analysis feedback systems. **(10 Marks)**

OR

8 a. Briefly describe the evolutionary model for knowledge discovery from texts with a neat diagram. **(10 Marks)**

b. Write a note on various approaches to analyzing texts. **(10 Marks)**

Module-5

9 a. Explain any two classical information retrieval models in detail. **(10 Marks)**

b. Write a short note on :
(i) Wordnet (ii) Framenet **(10 Marks)**

OR

10 a. Explain Cluster model and Fuzzy alternative IR models in detail. **(10 Marks)**

b. Write short note on :
(i) Zipf's law
(ii) tf-idf term weightage **(10 Marks)**

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