

**CMR ENGINEERING COLLEGE: : HYDERABAD  
UGC AUTONOMOUS**

**IV-B.TECH-I-Semester End Examinations (Regular) - November- 2024  
NATURAL LANGUAGE PROCESSING  
(Common for AI&DS, CSD)**

[Time: 3 Hours]

[Max. Marks: 70]

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A****(20 Marks)**

1. a) What is a morpheme? [2M]
- b) Tell two challenges in morphological analysis for natural language processing. [2M]
- c) Define a parse tree in the context of syntax analysis. [2M]
- d) What is a Treebank, and why is it important in parsing? [2M]
- e) What are word sense systems? [2M]
- f) List popular tools, frameworks in semantic parsing? [2M]
- g) What is the role of software tools in implementing predicate-argument structure analysis? [2M]
- h) What is a predicate-argument structure? [2M]
- i) What is a language model? [2M]
- j) How does smoothing improve N-gram models? [2M]

**PART-B****(50 Marks)**

2. What is document structure analysis, and why is it important in the context of information retrieval and text mining? [10M]
- OR**
3. Explain the role of word segmentation play in morphological analysis, and what are some challenges associated with it? [10M]
  4. Discuss the challenges and approaches for developing syntactic parsers in multilingual contexts. How do universal dependencies aid in this process? [10M]
- OR**
5. What are the main challenges in resolving syntactic ambiguities in natural language parsing? How do probabilistic models help in ambiguity resolution? [10M]
  6. What is semantic parsing, and why is it critical for natural language understanding (NLU)? Discuss its key components and applications. [10M]
- OR**
7. What are word sense systems, and how do they impact semantic parsing? Discuss approaches to word sense disambiguation (WSD). [10M]
  8. What are the challenges and potential solutions for developing multilingual predicate-argument structure models? [10M]
- OR**
9. How does semantic role labeling (SRL) relate to predicate-argument structures? Describe the process and its challenges. [10M]
  10. What are the types of language models, and how do they differ in capturing context? [10M]
- OR**
11. What is a language model, and how does it contribute to natural language processing tasks? [10M]

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