

Code No: **R20A6609****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****IV B.Tech I Semester Supplementary Examinations, April 2025****Natural Language Processing****(CSE-AIML, B.Tech-AIDS & B.Tech-AIML)**

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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing **ONE** Question from each SECTION and each Question carries 14 marks.

SECTION-I

- | | | | BCLL | CO(s) | Marks |
|----|----------|--|-------------|--------------|--------------|
| 1 | <i>A</i> | How does NLP bridge the gap between human communication and machine understanding? | L3 | CO-I | [7M] |
| | <i>B</i> | Explain the role of the NLTK package in NLP. | L3 | CO-I | [7M] |
| OR | | | | | |
| 2 | <i>A</i> | What are the main components of NLP? | L1 | CO-I | [7M] |
| | <i>B</i> | Describe Named Entity Recognition (NER) in detail. | L2 | CO-I | [7M] |

SECTION-II

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|----|----------|---|-----------|--------------|-------------|
| 3 | <i>A</i> | Explain phrase structure trees in detail. | L3 | CO-II | [7M] |
| | <i>B</i> | What are discriminative models in syntax parsing, and how do they differ from generative models? | L2 | CO-II | [7M] |
| OR | | | | | |
| 4 | <i>A</i> | Explain the Shift-Reduce parsing algorithm and how it is used in syntax analysis. | L2 | CO-II | [7M] |
| | <i>B</i> | Discuss the role of probabilistic and machine learning-based models in resolving structural and lexical ambiguities in parsing. | L3 | CO-II | [7M] |

SECTION-III

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|----|----------|---|-----------|---------------|-------------|
| 5 | <i>A</i> | How do unigram, bigram, and trigram models differ in terms of accuracy and computational complexity? | L3 | CO-III | [7M] |
| | <i>B</i> | Explain the concepts of perplexity and cross-entropy in evaluating language models. | L2 | CO-III | [7M] |
| OR | | | | | |
| 6 | <i>A</i> | What are the key differences between generative and discriminative models in the context of language modeling? | L3 | CO-III | [7M] |
| | <i>B</i> | What are some of the common language-specific challenges faced in language modeling for languages other than English? | L2 | CO-III | [7M] |

SECTION-IV

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|----|----------|--|-----------|--------------|-------------|
| 7 | <i>A</i> | Why semantic parsing is considered crucial for tasks? | L3 | CO-IV | [7M] |
| | <i>B</i> | How does the AllenNLP framework handle semantic parsing tasks? | L4 | CO-IV | [7M] |
| OR | | | | | |
| 8 | <i>A</i> | What are the major system paradigms used in semantic parsing? | L2 | CO-IV | [7M] |

B What are word sense systems, and how do they relate to semantic parsing? **L3** **CO-IV** **[7M]**

SECTION-V

9 **A** Explain the difference between a predicate and its arguments in the context of semantic parsing. **L2** **CO-V** **[7M]**

B Which of the tools support to identification of predicate-argument structures in text? **L3** **CO-V** **[7M]**

OR

10 **A** How does a good meaning representation system handle ambiguities in natural language? **L2** **CO-V** **[7M]**

B How do NLP systems manage discourse relations to maintain coherent understanding across multiple sentences? **L4** **CO-V** **[7M]**
