

(FOR THE CANDIDATES ADMITTED

23UAI517

DURING THE ACADEMIC YEAR 2023 ONLY)

REG.NO.

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER 2025

BSC COMP.SCIENCE WITH AI & ML

MAXIMUM MARKS: 75

SEMESTER V

TIME : 3 HOURS

PART - III

23UAI517 – NATURAL LANGUAGE PROCESSING

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

1. Natural Language Processing majorly deals with_____ processing.
a. Numeric data b. Image data c. Textual data d. Visual data
2. The Grammar {S->aSbb,S->abb} is _____ grammar.
a. Type 3 b. Type 2 c.Type 1 d. Type 0
3. In WSD, which method uses manually created lexical databases like WordNet?
a. Knowledge-based approach b. Supervised learning
c. Unsupervised clustering d. Context-free parsing
4. Which approach to machine translation uses rules created by linguists?
a. Statistical MT b. Neural MT c. Rule-based MT d. Hybrid MT
5. In phrase-based translation, the source sentence is translated in_____
a) Single words b) Character sequences
c) Multi-word segments (phrases) d) Grammar rules only

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. What is the first stage of Natural Language Processing (NLP)?
7. List out any two types of parsing.
8. Write any one difference between reference resolution and discourse coherence.
9. What is one major challenge in machine translation?
10. What is the main goal of automatic summarization?

SECTION – B

(5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Explain the origins and evolution of Natural Language Processing.
(OR)
b) Write short notes on any two popular NLP libraries and their features

(CONT...2)

12. a). Differentiate between Finite-State Automata (FSA) and Non-deterministic Finite Automata (NFA).
(OR)
b) Explain Context-Free Grammar (CFG) and how it is used to construct parse trees in NLP.
13. a) Explain meaning representation in NLP with an example
(OR)
b) What is cohesion in discourse processing? Give an example.
14. a) Give an example of an NLG application and explain how it works.
(OR)
b) What are the common problems faced in machine translation?
15. a) Discuss the major steps involved in Named Entity Recognition (NER).
(OR)
b) Give a short example of Python implementation for simple NER using spaCy.

SECTION – C**(5 X 8 = 40 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.(K4 (Or) K5)**

16. a) Describe the NLP pipeline in detail, highlighting each component with suitable examples.
(OR)
b) List the role of grammar in NLP and compare various grammar-based language models
17. a) Explicate in detail the concept of syntactic analysis in NLP, including the types of parsing and their applications.
(OR)
b) Analyze the relationship between constituency parsing, context-free grammar, and probabilistic models in NLP.
18. a) Enlighten lexical semantics and its role in semantic analysis. Give examples to illustrate.
(OR)
b) Discuss in detail the applications, methods, and challenges of Word Sense Disambiguation.
19. a) Explain the working of an NLG system with a detailed description of each stage and its function.
(OR)
b) Compare and contrast the different approaches to machine translation — rule-based, statistical, neural, and hybrid.
20. a) Explain the various techniques used in Information Extraction, including NER and Relation Extraction, with suitable examples.
(OR)
b) Analyze the role of sequence labeling in IE and describe a Python-based implementation for NER and Relation Extraction using this approach.
