

M.C.A. (2 Years) (Sem-II) Date: - 16/12/2024

(3 Hours)

Total Marks: 80

- N.B.:** 1) Question No.1 is **compulsory**.
 2) Attempt any **THREE** from the remaining questions.
 3) Figures to the right indicate full marks.

Q1. Write Short Notes on the following:

- (a) N-Gram Model [5]
- (b) Prepositional Phrases [5]
- (c) Ambiguities in NLP [5]
- (d) Text summarization. [5]

- Q2.** (a) Explain the challenges and application of NLP in detail [10]
 (b) What is the role of FSA in morphological analysis? Explain FST in detail. [10]

- Q3.** (a) Explain Hidden Markov Model. State it's applications in NLP. [10]
 (b) Define NLP. Explain the stages of NLP in detail. [10]

- Q4.** (a) What is semantic analysis. Explain following elements of Semantic analysis. [10]
 1. Homonym
 2. Hypernym
 3. Polysemy
 4. Synonym
 5. Antonym
 (b) What is POS tagging? Explain rule based and stochastic POS tagging with example. [10]

- Q5.** (a) What is sentiment analysis? Explain affective lexicons in detail. [10]
 (b) What is CFG? Derive a top-down, parse tree for the given sentence: [10]
 "The cat eats fish".
 Use the following grammar rules to create the parse tree:
 1. S -> NP VP 4. Det -> 'the'
 2. NP -> Det N 5. N -> 'cat' | 'fish'
 3. VP -> V NP 6. V -> 'eats'

- Q6.** (a) Differentiate Inflectional morphology & Derivational morphology [20]
 (b) Differentiate Stemming and Lemmatization.
 (c) Write a short note on Porter's Stemmer algorithm.
 (d) Explain Text Classification in detail.