

**K. J. Somaiya Institute of Technology, Sion, Mumbai-22**  
(Autonomous College Affiliated to University of Mumbai)

~~Nov-Dec 2025~~ April 2026

M.Tech. (Computer Engineering - Artificial Intelligence) Scheme II

*Supplementary* ~~Regular~~ Examination: FY Semester: I

Course Code: PCEDLC1042 and Course Name: Natural Language Processing

Date of Exam: ~~14/01/2026~~

Duration: 02.5 Hours

Max. Marks: 60

*08/04*

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any <b>two</b> questions out of three: (05 marks each)	10		
a)	Explain the various stages of Natural Language processing.		CO1	U
b)	Design Finite State Transducer for the word CATS.		CO2	Ap
c)	Explain Stochastic POS tagging with an example.		CO3	U
Q 2	Solve any <b>two</b> questions out of three: (05 marks each)	10		
a)	Explain WSD with block diagram and example.		CO4	U
b)	Explain semantic constraints used in Hobb's algorithm.		CO5	U
c)	Explain Information retrieval system.(3 M) List applications of it.(2 M)		CO6	U
Q.3	Solve any <b>two</b> questions out of three. (10 marks each)	20		
a)	Apply morphological parsing to analyze the structure of the word "applicable." Identify the root, prefix, suffix, and explain the role of each morpheme in forming the final word.		CO2	AP

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b)	Why is POS tagging hard? Explain different types of POS tagging. What are possible challenges while performing POS tagging.		CO3	AN
c)	Analyze the different types of semantic relations that exist among lexemes and their senses, using suitable examples. In your answer, compare and differentiate between relations such as synonymy, antonymy, hyponymy, meronymy, and polysemy.		CO4	AN
Q.4	Solve any <b>two</b> questions out of three. (10 marks each)	20		
a)	Analyze the structure and grammatical roles of Noun Phrases (NP), Verb Phrases (VP), and Prepositional Phrases (PP) in sentence construction. Illustrate your analysis with suitable examples showing how these phrases interact to form a complete syntactic structure.		CO4	AN
b)	Explain various Preferences in Pronoun Interpretation with suitable examples		CO5	AN
c)	List different applications of NLP. Explain in detail design of Sentiment Analysis system for Amazon product design refinement based on reviews.		CO6	AP

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