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

Jan-Feb ~~Nov – Dec~~ 2025 B. Tech Program: AI - DS SchemeIIB
Supplementary ~~Regular~~ Examination: LY Semester: VII
Course Code: AIC 702 Course Name: Natural Language Processing
Date of Exam: ~~29/11/2025~~ 03/02/26 Duration: 02.5 Hours Max. Marks: 60

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 **two** questions out of three: (05 marks each)	10		
a)	Describe various stages in NLP		1	U
b)	Differentiate between stemming & Lemmatization with suitable examples.		2	U
c)	How does top down parsing differ from bottom up parsing? Discuss with examples.		3	U
Q 2	Solve any **two** questions out of three: (05 marks each)	10		
a)	Describe the applications of WSD in various fields of NLP		4	U
b)	Explain the concept of implicature in Pragmatics in brief.		5	U
c)	Discuss about the information retrieval in brief with neat block diagram		6	U
Q.3	Solve any **two** questions out of three. (10 marks each)	20		
a)	Discuss various challenges faced in NLP.		1	U
b)	Define POS tagging, describe the types of POS tagging in detail with suitable examples. State 2 applications of POS tagging.		3	U
c)	Describe the 5 aspects of Pragmatic Analysis? Explain in detail with suitable examples.		5	U
Q.4	Solve any **two** questions out of three. (10 marks each)	20		
a)	Consider the following corpus: "*natural language processing is fun . language models are useful . natural language models learn patterns* ." Calculate the probability		2	Ap

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	of the sentence using Bigram and Trigram language models: *"natural language models are useful"*		
b)	You are given the following tagged corpus: • "the/DET cat/NOUN sleeps/VERB" • "the/DET cat/NOUN eats/VERB fish/NOUN" • "a/DET dog/NOUN eats/VERB food/NOUN" Using your calculated transition and emission probabilities, apply the Viterbi algorithm to determine the most likely tag sequence for the sentence: "*the cat eats*"	3	Ap
c)	A university wants to implement an NLP-based automated résumé screening system to identify suitable candidates for a Data Science internship. You are given the following excerpt from a résumé: "Proficient in Python, machine learning, and data visualization. Completed projects using NLP and deep learning. Seeking opportunities to apply analytical skills." Which NLP tasks would be apt for the task?	4	Ap

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