

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

Nov – Dec 2023

(B.Tech) Program: AI-DS Scheme ~~VII/IV/III-~~

Examination: LY Semester: VII

Course Code: AIC702 and Course Name: Natural Language Processing

Date of Exam: 01/12/2023

Duration: 2.5 Hours

Max. Marks: 60

Instructions*

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

		Max. Marks	CO	BT level
Q 1	Solve any six questions out of eight:	12		
i)	What is Polysemy? Give an example	2	6	U
ii)	What are the main challenges of NLP?	2	1	U
iii)	What is the number of Types and Tokens for the given sentence: "I eat what I eat, even if have never eaten it before"	2	2	U
iv)	What does Part of Speech Tagger determine?	2	3	U
v)	In linguistic morphology what is the process for reducing inflected words to their root form?	2	2	U
vi)	What is the difference between semantic and syntactic information?	2	3	U
vii)	Compose regular expression to identify email addresses	2	2	An
viii)	What is Semantic Analysis?	2	4	U
Q.2	Solve any four questions out of six.	16		
i)	Write a short note on statistical machine translation	4	6	An
ii)	What are the processing stages of NLP?	4	1	An
iii)	What is the role of Regular Expressions and Automata in the development of a NLP system ?	4	2	U
iv)	What is latent semantic analysis?	4	4	U
v)	Draw Context Free Grammar Parse tree for the given sentences: a) I want a morning flight. b) She took the lesson to heart.	4	3	Ap
vi)	Elaborate different approaches used for Word Sense Disambiguation	4	5	U

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Q.3	Solve any two questions out of three:	16		
i)	Analyze and identify the type of ambiguity present in the sentence, i) "Horse ran up the hill. It was very steep. It soon got very tired" ii) "The car hit the pole while it was moving." iii) "I saw a military tank."	8	1	An
ii)	1. I am a human 2. I am not a robot 3. I am walking towards the station 4. I am what I am 5. I live in Mumbai Considering the 5 sentence corpus given, calculate the probability of the sentence, "I am not in Mumbai." Using a Bigram Language Model. Also suggest ways and methods by which the probability can be improved.	8	2	Ap
iii)	Write a short note on 5 aspects of Pragmatic Analysis	8	5	U
Q.4	Solve any two questions out of three.	16		
i)	a) Mary opened a can of raisins. b) Can I be more vocal? c) Will and Mary will get married. Assuming a test sentence "Will can see Mary" being incorrectly tagged as follows: Will ⇒ Modal Can ⇒ Verb See ⇒ Noun Mary ⇒ Noun Calculate the probability of these tags being correct.	8	3	U
ii)	Explain Homonymy, Homophony, Hyponymy, Polysemy, Synonymy	8	4	U
iii)	Explain in detail different steps involved in the development of Speech Recognition System	8	6	U
