

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

End Semester Exam

Nov -Dec2021

Program: B.Tech (Computer Engineering)

Examination: LY Semester: VII

Course Code: 1UCEDLC7034 Course Name: Natural Language Programming

Duration:03Hours

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.Ma rks	CO	BTLevel
Q.1	Solve any six questions out of eight:	12		
i)	Explain Stages of NLP in brief	2	CO1	U
ii)	How is feature extraction done in NLP?	2	CO1	U
iii)	Name some popular models other than Bag of words.	2	CO2	U
iv)	State the difference between homonymy and polysemy and give an example of each.	2	CO4	U
v)	Explain Context-free grammar in brief.	2	CO3	U
vi)	Explain Named Entity Recognition by implementing it.	2	CO5	U
vii)	What is Parts-of-speech Tagging?	2	CO3	U
viii)	Explain Lemmatization with the help of an example	2	CO2	U
Q.2	Solve any four questions out of six.	16		
i)	How inferrables, discontinuous sets and generics complicate the reference resolution process? Explain in detail.	4	CO4	U
ii)	With a neat diagram describe how a typical NLP system is organized.	4	CO1	E
iii)	What are the 2 main classes of tagging algorithms in which they can be grouped into? Explain each one in detail	4	CO3	U
iv)	What is meant by the semantics of a natural language, and how this differs from the pragmatics?	4	CO4	U
v)	Differentiate between top-down and bottom-up parsing.	4	CO2	U
vi)	Analyze how statistical methods can be used in machine translation.	4	CO6	Ap
Q.3	Solve any two questions out of three.	16		
i)	Describe reference phenomena in detail.	8	CO4	U
ii)	What is Natural Language Processing? Discuss with	8	CO1	U

	some applications.					
iii)	Given the following CFG grammar from ATIS System, USA. Perform syntactic analysis of the following sentence using any of the parsing method. "Book the flight through Houston."	8	CO3	C		
	<table border="1"> <tr> <td>S → NP VP S → Aux NP VP S → VP NP → Pronoun NP → Proper-Noun NP → Det Nominal Nominal → Noun Nominal → Nominal Noun VP → Verb VP → Verb NP VP → Verb NP PP VP → Verb PP VP → VP PP PP → Preposition NP</td> <td> Det → that this a the Noun → book man flight Verb → book include prefer man Pronoun → I she me Proper-Noun → Houston TWA Aux → does Preposition → from to through </td> </tr> </table>	S → NP VP S → Aux NP VP S → VP NP → Pronoun NP → Proper-Noun NP → Det Nominal Nominal → Noun Nominal → Nominal Noun VP → Verb VP → Verb NP VP → Verb NP PP VP → Verb PP VP → VP PP PP → Preposition NP	Det → that this a the Noun → book man flight Verb → book include prefer man Pronoun → I she me Proper-Noun → Houston TWA Aux → does Preposition → from to through			
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Q.4	Solve any two questions out of three.	16				
i)	Explain the architecture of an Information Retrieval system with a neat diagram	8	CO5	U		
ii)	What is morphology? Why we need to do morphological analysis? Explain derivational & inflectional morphology in detail	8	CO2	U		
iii)	Derive a top-down, depth-first, left-to-right parse tree for the given sentence: "The angry bear chased the frightened little squirrel" Use the following grammar rules to create the parse tree:	8	CO3	C		
	<table border="1"> <tr> <td>S → NP VP NP → Det Nominal VP → Verb NP Nominal → Adj Nominal N</td> <td> Det → the Adj → little angry frightened N → squirrel bear V → chased </td> </tr> </table>	S → NP VP NP → Det Nominal VP → Verb NP Nominal → Adj Nominal N	Det → the Adj → little angry frightened N → squirrel bear V → chased			
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