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

April - May 2023
(B.Tech.) Program: Information Technology
Examination: LY Semester: VIII

Course Code:ITDLC8021 and Course Name: Natural Language Processing(NLP)

Date of Exam: 16/05/2023 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)	Consider the statement "The students went to class". Assign POS tags for the statement.	**02**	CO2	L3
ii)	What is FST? Draw the three tapes illustrating with one example. What are the applications of FST?	**02**	CO2	L1
iii)	List the potential problems of CFG.	**02**	CO3	L1
iii)	Recognize the NER tags for the following statement: आज जयश्री कंबल बुन रही थी।	**02**	CO6	L1
iv)	Define discourse and pragmatic analysis.	**02**	CO5	L1
v)	What is Semantic analysis? Why is it difficult?	**02**	CO4	L1
vi)	Explain the text summarization system for a regional language.	**02**	CO6	L1
vii)	Identify the type of deixis present in the following example "Would you mind leaving the class now"	**02**	CO5	L2
Q.2	**Solve any four questions out of six.**	**16**		
i)	Discuss the ambiguities in NLP with examples.	**04**	CO1	L2

ii)	Consider the Context free grammar: S → NP VP S → N VP NP → J N VP → V NP VP → V N N → teacher N → strikes N → kids J → teacher J → idle V → strikes V → idle Create and fill in (using dynamic programming) the CYK chart that parses the sentence "Teacher strikes idle kids." How many valid parses are there? Draw the parse tree for each one.	**04**	CO2	L4
iii)	Explain Conditional Random Field (CRF). Compare CRF and HMM.	**04**	CO3	L3
iv)	Why is Word Sense Disambiguation a challenging problem in natural language processing?	**04**	CO4	L2
v)	Explain the five aspects of Pragmatics in detail.	**04**	CO5	L2
vi)	Explain the architecture of an Information Retrieval system with a neat diagram.	**04**	CO6	L2
Q.3	**Solve any two questions out of three.**	**16**		
i)	Describe all the levels of language understanding in natural language processing.	**08**	CO1	L1
ii)	Apply finite state automata in morphological parsing. Illustrate it with suitable example ..	**08**	CO2	L3
iii)	Explain open and closed word classes in English Language. Comment on possible tag sets available in English Natural Language.Show how the tags are assigned to the words of the following sentence:"Time flies like an arrow."	**08**	CO3	L3
Q.4	Solve any two questions out of three.	**16**		
i)	Analyze various approaches for semantic analysis.	**08**	CO4	L2
ii)	Describe various types of referring expressions. "He entered John's house through the front door". Find the referring expression in the statement.	**08**	CO5	L3
iii)	Explain the Rule based Machine translation System. Apply NLP techniques for translating English documents to any regional language.	**08**	CO6	L3