Course Code: 23AM5T03

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

III - B.Tech I-Semester Regular Examinations (BR23), Nov/Dec - 2025

NATURAL LANGUAGE PROCESSING (AI&ML)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
*Answer **ALL**the question in **Part-A andPart-B***

PART–A (10X2 = 20M)

		Marks	CO	BL
1. a)	Compare Grammar-based and Statistical language models.	(2M)	CO1	BL5
b)	Define Minimum Edit Distance. How is it calculated?	(2M)	CO1	BL1
c)	Illustrate Word Classes in detail.	(2M)	CO2	BL3
d)	List out challenges in POS tagging.	(2M)	CO2	BL1
e)	Explain Treebanks with examples.	(2M)	CO3	BL2
f)	Define Chomsky Normal Form.	(2M)	CO3	BL1
g)	Demonstrate Word Sense Disambiguation. Why is it important?	(2M)	CO4	BL3
h)	Illustrate the pros and cons of Supervised WSD.	(2M)	CO4	BL4
i)	Define Anaphora, Cataphora, and Exophora with examples.	(2M)	CO5	BL1
j)	Compare Coreference resolution and Anaphora resolution.	(2M)	CO5	BL5

PART–B (5X10 = 50M)

2a.	List and explain Origins and Challenges of NLP.	5(M)	CO1	BL2
b.	Define is Regular Expressions? Construct DFA that recognizes a string over the alphabet {0,1} that ends with "01".	5(M)		BL6
	(OR)			
3a.	Illustrate the concept of tokenization and explain its role in text preprocessing.	5(M)	CO1	BL3
b.	Discuss in detail about English Morphology.	5(M)		BL2

4a.	What is a statistical language model? Explain n-gram models in detail.	5(M)	CO2	BL2
b.	Illustrate smoothing techniques in detail.	5(M)		BL4
	(OR)			
5a.	Briefly describe the use of Hidden Markov Models for POS tagging.	5(M)	CO2	BL2
b.	Compare Rule-based and Stochastic POS tagging.	5(M)		BL5

6a.	Illustrate Top-down and Bottom-up parsing strategies in detail.	5(M)	CO3	BL4
b.	Given Grammar S-> AB | BB A->CC|AB |a B-> BB |CA |b C->BA|AA |b	5(M)		BL3

	Word w= aabb. Apply Top-down parsing test, the word can be generated or not.			
	(OR)			
7a.	Define Context-Free Grammar?Write and explain CFG rules for simple English sentences.	5(M)	CO3	BL2
b.	Illustrate the CYKalgorithm with example.	5(M)		BL4

8a.	What is First-Order Logic? Show its components with examples.	5(M)	CO4	BL3
b.	Explain the concept of Syntax-driven semantic analysis.	5(M)		BL2
	(OR)			
9a.	Explain the principle of Compositionality with Syntax-driven semantics.	5(M)	CO4	BL2
b.	Define Description Logic? Explain how is it used in Ontology-based systems?	5(M)		BL2

10a	Compare Stemming and Lemmatization with suitable examples	5(M)	CO5	BL5
b.	Define Discourse Coherence?Discuss the role of Discourse markers in identifying coherence.	5(M)		BL2
	(OR)			
11a	Describe Hobbs' algorithm for anaphora resolution. Illustrate its strengths and weaknesses?	5(M)	CO5	BL4
b.	What is WordNet? Explain its structure and applications in NLP.	5(M)		BL2

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