Q. Code: 499152

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2023

Sixth Semester

AD18603 – NATURAL LANGUAGE PROCESSING TECHNIQUES

(Artificial Intelligence and Data Science)

(Regulation 2018)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Tag a given text with basic Language features.	**3**
CO 2	Design an innovative application using NLP components.	**5**
CO 3	Implement a rule based system to tackle morphology/syntax of a language.	**3**
CO 4	Design a tag set to be used for statistical processing for real-time applications.	**5**
CO 5	Compare and contrast the use of different statistical approaches for different types of NLP applications.	**4**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Write regular expressions for the set of all alphabetic strings and the set of all lower case alphabetic strings ending in a b.	**1**	**2**
2.	What is meant by Lexicon? How is it useful in NLP?	**1**	**2**
3.	Differentiate between open class words and closed class words.	**2**	**2**
4.	What is hidden in Hidden Markov model in NLP and how is the model's probability computed?	**2**	**2**
5.	What is dynamic programming parsing in NLP?	**3**	**2**
6.	What are treebanks used for?	**3**	**2**
7.	Differentiate hyponymy and hypernymy.	**4**	**2**
8.	Is sentence could be structurally ambiguous.	**4**	**2**
9.	Give two examples for Discourse segmentation.	**5**	**1**
10.	Which is better lemmatization vs stemming?	**5**	**2**

PART- B (5 x 14 = 70 Marks)

			Marks	CO	RBT LEVEL
11. (a)	**(i)**	List and explain the Challenges of NLP.	**(7)**	**1**	**2**

	(ii)	Explain the role of transformational rules in transformational grammar with the help of an example.	**(7)**	**1**	**2**
		(OR)			
(b)	**(i)**	Explain the Statistical Language Model and find the probability of the test sentence P (they play in a big garden) in the following training set using the bi-gram model. <S>There is a big garden Children play in the garden They play inside beautiful garden</S>	**(7)**	**1**	**2**
	(ii)	Explain the Minimum Edit Distance Algorithm and compute the minimum edit distance between EXECUTION and INTENTION	**(7)**	**1**	**3**
12. (a)		List the problems associated with the n-gram model and explain how these problems are handled.	**(14)**	**2**	**3**
		(OR)			
(b)		Illustrate Part of Speech Tagging and explain different categories of POS tagging with suitable example.	**(14)**	**2**	**3**
13. (a)		Explain Top Down and Bottom Up Parsing with an example.	**(14)**	**3**	**2**
		(OR)			
(b)		Explain about Probabilistic CFG and Probabilistic CYK with your own example.	**(14)**	**3**	**2**
14. (a)		Discuss the relationship between Senses, Thematic Roles and selection restrictions.	**(14)**	**4**	**4**
		(OR)			
(b)		Analyze the significance of Word Sense Disambiguation in NLP. Explain any one WSD method.	**(14)**	**4**	**4**
15. (a)		Illustrate the Anaphora Resolution using Hobbs and Centering Algorithm with a suitable example.	**(14)**	**5**	**3**
		(OR)			
(b)		Explain WordNet and list the applications of WordNet.	**(14)**	**5**	**2**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	**CO**	**RBT LEVEL**
16.	Explain the Construction of a FSA for time-of-day expressions like eleven o'clock, twelve-thirty, mid-night, or a quarter to ten, and others.	**(10)**	1	**5**

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