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Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)



B. Tech (Seventh Semester - Regular) Examinations, November – 2024
21BCMPE47011 – Computational Linguistics and Natural Language Processing
CSE(AIML)

Time: 3 hrs

Maximum: 70 Marks

Answer ALL questions
(The figures in the right hand margin indicate marks)

PART – A**(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. Explain the role of pragmatic analysis in NLP?	CO1	K1
b. Describe the role of an “add-one smoothing” in statistical language model?	CO2	K1
c. How would you implement caching to improve the efficiency of an n-gram model?	CO2	K3
d. How would you identify whether a word belongs to the open class or closed class in a given text?	CO3	K4
e. What is the need of Lexicalization?	CO4	K1

PART – B**(15 x 4 = 60 Marks)**Answer **All** the questions

	Marks	CO #	Blooms Level
2. a. Describe different applications of NLP.	8	CO1	K1
b. What is f-structure in LFG? What inputs to an algorithm create an f-structure?	7	CO2	K1
(OR)			
c. Compare between GB and PG theory	8	CO2	K2
d. Make a list of the challenges faced by NLP.	7	CO1	K1
3.a. Write a note on the following:	8	CO2	K2
\bar{X} theory b. Theta Theory			
b. Explain the Lexical Functional grammar and its working culture of a sentence, “She saw stars in the sky” by using the following CFG.	7	CO3	K3
S → NP VP			
VP → V {NP} {NP} PP* {S'}			
PP → P NP			
NP → Det N {PP}			
S' → Comp S			
(OR)			
c. Discuss the disadvantages of the basic top-down parser with the help of an appropriate example.	8	CO3	K1
d. Explain the principles of Paninian Grammar.	7	CO1	K1
4.a. Analyse the significance of Word Sense Disambiguation in NLP. Explain any one WSD method	8	CO2	K2
b. What do you mean by PoS tagging. Explain different types of PoS tagging and their use.	7	CO2	K1
(OR)			
c. Use the following grammar:	8	CO4	K3

S → NP VP

NP → Noun

VP → Verb

S → VP

NP → NP PP

VP → VP PP

NP → Det N

VP → VP NP

PP → Preposition NP

Give two possible parses of the sentence: “pluck the flower with the stick”.

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|------|---|---|-----|----|
| d. | Discuss the disadvantages of probabilistic context free grammar. | 7 | CO3 | K2 |
| 5.a. | Explain the different categories of spelling correction algorithms. | 8 | CO3 | K1 |
| b. | Compute the minimum edit distance between “Thunder” and “Blunder”. | 7 | CO4 | K4 |

(OR)

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|----|--|---|-----|----|
| c. | Differentiate between top-down and bottom-up parsing in NLP. | 8 | CO3 | K2 |
| d. | Write short notes on | 7 | CO2 | K1 |

(i) Machine translation

(ii) Text summerisation

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