B.E. / B.Tech - DEGREE EXAMINATIONS, NOV / DEC 2023
Fifth Semester
Artificial Intelligence and Data Science
20AIPC503 - NATURAL LANGUAGE PROCESSING AND CHAT BOT
(Regulations 2020)

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks, K-Level, CO
1.	What is Natural Language Processing (NLP)?	*2,K1,CO1*
2.	List the applications of the NLP.	*2,K1,CO1*
3.	Differentiate between open class and closed class of words.	*2,K2,CO2*
4.	Summarize the way of using lexical semantics and word semantics in representing the word in NLP.	*2,K2,CO2*
5.	Define Parsing.	*2,K1,CO3*
6.	Compare the semantic grammar with context-free grammar.	*2,K2,CO3*
7.	What is localization?	*2,K1,CO4*
8.	What is Word order Topology?	*2,K2,CO4*
9.	What is a Chabot?	*2,K2,CO5*
10.	Differentiate between a script-bot and a smart-bot.	*2,K2,CO5*

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

11.	a)	Explain the steps involved in the process of natural language processing with suitable examples.	*13,K2,CO1*

OR

	b)	Explain 'n-gram' model with the procedure for tackling data sparseness problem in n-gram model.	*13,K2,CO1*

12.	a)	Explain in detail about the general methods used to learn word embeddings for representing words lexical semantics with suitable example.	*13,K2,CO2*

OR

	b)	Explain the significance of various Word Sense Disambiguation methods in NLP with suitable example.	*13,K2,CO2*

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **12394**

13. a) Implement the algorithm to convert arbitrary context-free grammars to CNF. Apply your program to the L1 grammar. *13,K2,CO3*

OR

b) Explain the architecture of an Information Retrieval system with a neat diagram. *13,K2,CO3*

14. a) Explain the two types of Rule - based machine translation techniques. *13,K2,CO4*

OR

b) Explain about the encoder-decoder transformer architecture for machine translation. *13,K2,CO4*

15. a) Explain in detail about the role of Natural language Generation in the dialogue-state model. *13,K2,CO5*

OR

b) Explain in detail about the goal based chat bot framework with suitable architecture. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Develop a model for NLP-based healthcare chat bot. *15,K3,CO6*

OR

b) Build a Chat bot model for assisting the Teaching and Learning Process in educational sector. *15,K3,CO6*