Code: 20A05702c

R20

B.Tech III Year II Semester (R20) Regular Examinations August 2023

NATURAL LANGUAGE PROCESSING

(Common to AI&DS, CSE (AI) and CSE (AI&ML))

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a)	Name two types of representations used in natural language understanding systems.	2M
(b)	What is the purpose of evaluating language understanding systems?	2M
(c)	What are feature systems in natural language processing?	2M
(d)	Define morphological analysis and its relationship to the lexicon.	2M
(e)	How can context-free grammars be modified to handle questions?	2M
(f)	Explain the concept of hold mechanisms in Augmented Transition Networks (ATNs).	2M
(g)	Define semantic interpretation and its role in natural language understanding.	2M
(h)	Describe the process of resolving semantic ambiguity in the context of logical form representation.	2M
(i)	Define multilingual information retrieval (MLIR).	2M
(j)	What is the purpose of machine translation?	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2	Design an NLP-based application that assists in language translation.	10M
	OR	
3	Create a syntactic parsing tree for one English sentence.	10M
4	Design a top-down parsing algorithm for any context-free grammar.	10M
	OR	
5	Develop a morphological analyzer that can identify and analyze different word forms in a text.	10M
6	Apply shift-reduce parsing to a given sentence and construct a parse tree.	10M
	OR	
7	Implement a hold mechanism in an Augmented Transition Network.	10M
8	Discuss techniques for leveraging multilingual data in language modeling, such as transfer learning.	10M
	OR	
9	Discuss the impact of language-specific phenomena, such as honorifics or politeness, on language modeling.	10M
10	Describe competitions and datasets used for benchmarking multilingual automatic summarization systems.	10M
	OR	
11	Explain the background and context of Anusaraka or Language Accessor. Discuss the concept of "cutting the Gordian knot" in the context of Anusaraka.	10M

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B.Tech III Year II Semester (R20) Supplementary Examinations January 2024

NATURAL LANGUAGE PROCESSING

(Common to AI&DS, CSE (AI), and CSE (AI&ML))

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1		Answer the following: (10 X 02 = 20 Marks)	
	(a)	Define Natural Language Processing (NLP).	2M
	(b)	List the different levels of language analysis in NLP.	2M
	(c)	Define top-down parsing and bottom-up parsing.	2M
	(d)	Explain the concept of transition network grammars.	2M
	(e)	Recall the basic principles of shift-reduce parsers and deterministic parsers.	2M
	(f)	Describe the movement phenomenon in language and its significance in syntactic analysis.	2M
	(g)	What is the basic logical form language used in semantic representation?	2M
	(h)	How can thematic roles help in capturing verb and state semantics in logical form representation?	2M
	(i)	Explain the concept of "cutting the Gordian knot" in the context of Anusaraka.	2M
	(j)	What is the difference between monolingual information retrieval and cross-lingual information retrieval (CLIR)?	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2	Construct a language understanding system that can classify text into different categories.	10M
	OR	
3	Propose a strategy to improve the performance of a natural language understanding system.	10M
4	Create a feature-based grammar that can parse sentences with syntactic and semantic constraints.	10M
	OR	
5	Implement a transition network grammar for a specific language processing task.	10M
6	Develop a syntax tree for a sentence involving movement phenomena.	10M
	OR	
7	Analyze the functioning of hold mechanisms in Augmented Transition Networks and their role in parsing.	10M
8	Describe techniques for language model adaptation, such as domain adaptation and personalized adaptation.	10M
	OR	
9	Describe the concept of predicate-argument structure and its relationship to semantic interpretation.	10M
10	Explain the difference between monolingual information retrieval and cross-lingual information retrieval (CLIR).	10M
	OR	
11	Explain the linguistic area covered by Anusaraka and its language capabilities.	10M

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