GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

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QUESTION BANK

(DESCRIPTIVE)

Subject Name with Code: NATURAL LANGUAGE PROCESSING (23A0533Tc)

Year& Semester: III-II Regulation: RG23

Course & Branch: B. TECH & CSE (DATA SCIENCE)

UNIT – I

2 Marks Questions (Short)		
S.No.	**Question**	**Levels/ CO'S/Marks**
1	What are the main objectives of studying natural language?	(L2/CO1/2M)
2	List any two real-world applications of NLP?	(L1/CO1/2M)
3	What is sentiment analysis?	(L1/CO1/2M)
4	Explain how recall is used to evaluate the performance of NLP systems.	(L2/CO1/2M)
5	What is morphological analysis?	(L1/CO1/2M)
6	What is knowledge representation in NLP?	(L2/CO1/2M)
7	What is the role of the parser in an NLU system?	(L2/CO1/2M)
8	List the different levels of language analysis?	(L1/CO1/2M)
9	What is the difference between natural language and formal language?	(L2/CO1/2M)
10	What is meant by sentence structure in English syntax?	(L2/CO1/2M)
10 Marks Questions (Long)		
S.No.	**Question**	**Levels/ CO'S/Marks**
1	What is meant by the study of language? Explain its relevance and importance in Natural Language Processing?	(L2/CO1/10M)
2	Define Natural Language Processing (NLP)? Explain various applications of NLP?	(L2/CO1/10M)
3	Explain the need for evaluating language understanding systems? What are the criteria used for evaluation?	(L3/CO1/10M)
4	Define language analysis? Explain the different levels of language analysis used in NLP?	(L2/CO1/10M)
5	What is meant by representation in NLP? Explain how representation helps in language understanding?	(L3/CO1/10M)
6	Define Natural Language Understanding (NLU) systems? Explain the organization of an NLU system with a neat diagram?	(L3/CO1/10M)
7	Explain the linguistic background required for NLP? Give an outline of English syntax?	(L2/CO1/10M)
8	Explain syntactic analysis and semantic analysis in NLP with suitable examples?	(L3/CO1/10M)
9	Explain rule-based and knowledge-based approaches used in language understanding systems?	(L2/CO1/10M)
10	What is meant by language understanding? Explain the challenges involved in understanding natural language?	(L3/CO1/10M)

UNIT – II

2 Marks Questions (Short)		
S.No.	**Question**	**Levels/ CO'S/Marks**
1	Why is parsing essential in language understanding systems?	(L2/CO2/2M)
2	What are the basic differences between Top-Down and Bottom-Up parsing approaches?	(L2/CO2/2M)
3	How are Transition Network Grammars used in sentence analysis?	(L3/CO2/2M)
4	Why are feature constraints useful in resolving agreement errors?	(L2/CO2/2M)
5	How does an Augmented Grammar extend the capabilities of a simple grammar?	(L3/CO2/2M)
6	Compare lexicon-based analysis and rule-based analysis?	(L3/CO2/2M)
7	Why is morphological analysis considered a prerequisite for parsing?	(L2/CO2/2M)
8	Why is Bayes Rule important for resolving ambiguity in NLP?	(L2/CO2/2M)
9	What is cross entropy in Natural Language Processing?	(L2/CO2/2M)
10	How does the lexicon contribute to word sense disambiguation?	(L3/CO2/2M)
10 Marks Questions (Long)		
S.No.	**Question**	**Levels/ CO'S/Marks**
1	Explain the concept of grammars in Natural Language Processing and discuss the role of parsing in language understanding systems?	(L2/CO2/10M)
2	Explain the Top-Down parsing technique and the Bottom-Up parsing technique with suitable examples?	(L2/CO2/10M)
3	Describe Transition Network Grammars and explain their use in syntactic analysis of natural language sentences?	(L3/CO2/10M)
4	Explain Feature Systems and Augmented Grammars, highlighting their necessity in Natural Language Processing?	(L2/CO2/10M)
5	Discuss Morphological Analysis and explain the structure and role of the Lexicon in NLP systems?	(L3/CO2/10M)
6	Explain parsing with features and illustrate how feature structures are used during the parsing process?	(L3/CO2/10M)
7	Describe Augmented Transition Networks (ATN) and explain their components and working with suitable illustrations?	(L3/CO2/10M)
8	State and explain Bayes Rule and discuss its applications in probabilistic Natural Language Processing?	(L3/CO2/10M)
9	Explain the Shannon Game and illustrate how it is used in language modeling and prediction?	(L3/CO2/10M)
10	Define Entropy and Cross Entropy and explain their importance in evaluating language models?	(L2/CO2/10M)

UNIT – III

2 Marks Questions (Short)		
S.No.	**Question**	**Levels/ CO'S/Marks**
1	How do context-free grammars help in analyzing natural language sentences?	(L3/CO3/2M)
2	What is meant by movement phenomenon in language syntax?	(L2/CO3/2M)
3	How can context-free grammars be adapted to handle questions?	(L3/CO3/2M)
4	What is a hold mechanism in Augmented Transition Networks (ATNs)?	(L2/CO3/2M)
5	What is gap threading in NLP parsing?	(L2/CO3/2M)
6	How can human parsing preferences influence computational parsers?	(L3/CO3/2M)
7	What is a shift-reduce parser?	(L2/CO3/2M)
8	What is the difference between shift and reduce actions in shift-reduce parsers?	(L2/CO3/2M)
9	What is a deterministic parser?	(L2/CO3/2M)

10	How is gap threading applied to track missing constituents in sentences?	(L3/CO3/2M)

10 Marks Questions (Long)

S.No.	Question	Levels/ CO'S/Marks
1	What are grammars for natural language? Discuss their role in syntactic analysis with suitable examples?	(L2/CO3/10M)
2	How is movement phenomenon handled in computational parsers? Illustrate with examples?	(L3/CO3/10M)
3	What is the movement phenomenon in language? Explain with suitable examples of wh-movement or topicalization?	(L2/CO3/10M)
4	Define the challenges of handling questions in context-free grammars and explain with examples?	(L2/CO3/10M)
5	How does a hold mechanism help ATNs process nested or complex sentence structures? Illustrate with examples?	(L3/CO2/10M)
6	How is gap threading applied in computational parsers to track missing constituents? Illustrate with an example?	(L3/CO2/10M)
7	Define shift-reduce parsing and explain its working with an example?	(L2/CO3/10M)
8	What is a deterministic parser? Explain its features and advantages over non-deterministic parsers?	(L2/CO3/10M)
9	Explain the difficulties involved in handling questions using context-free grammars?	(L2/CO3/10M)
10	Explain how gap threading is applied in parsing to track displaced or missing constituents?	(L3/CO2/10M)

UNIT – IV

2 Marks Questions (Short)

S.No.	Question	Levels/ CO'S/Marks
1	What is meant by semantic representation in NLP?	(L2/CO4/2M)
2	How does logical form help in representing sentence meaning?	(L3/CO4/2M)
3	What are word senses in NLP?	(L2/CO4/2M)
4	What is the basic logical form language used in NLP?	(L2/CO4/2M)
5	What is the role of verbs and states in logical form representation?	(L2/CO4/2M)
6	How are thematic roles assigned in sentence interpretation?	(L3/CO4/2M)
7	What is meant by a speech act in NLP?	(L2/CO4/2M)
8	How do statistical language models differ from rule-based models?	(L3/CO4/2M)
9	What is meant by model-theoretic semantics?	(L2/CO4/2M)
10	What is cross-lingual language modeling?	(L2/CO4/2M)

10 Marks Questions (Long)

S.No.	Question	Levels/ CO'S/Marks
1	Define semantic representation and logical form in Natural Language Processing?	(L2/CO4/10M)
2	What are word senses and ambiguity? Explain how ambiguity is handled in semantic analysis?	(L3/CO4/10M)
3	Explain the basic logical form language used in NLP and describe how ambiguity is encoded in logical form?	(L3/CO4/10M)
4	What is meant by verbs and states in logical form? Explain the role of thematic roles?	(L2/CO4/10M)
5	Define speech acts and embedded sentences and explain their importance in semantic interpretation?	(L3/CO4/10M)
6	What is model-theoretic semantics? Explain how semantic structure is defined using model theory?	(L2/CO4/10M)

7	Explain language modeling in NLP and describe the working of n-gram language models?	(L2/CO4/10M)
8	Define language model evaluation and explain the methods used to evaluate language models?	(L3/CO4/10M)
9	What is parameter estimation? Explain language model adaptation techniques used in statistical language models?	(L3/CO4/10M)
10	Explain the different types of language models and discuss language-specific modeling problems in multilingual and cross-lingual language modeling?	(L2/CO4/10M)

UNIT – V

2 Marks Questions (Short)		
S.No.	**Question**	**Levels/ CO'S/Marks**
1	What are the main objectives of Machine Translation?	(L2/CO5/2M)
2	What are language bridges and how are they used in Anusaraka?	(L3/CO5/2M)
3	How can Machine Translation be made practically useful despite its limitations?	(L3/CO5/2M)
4	What are the different approaches used in Machine Translation?	(L2/CO5/2M)
5	How do rule-based and statistical approaches differ in Machine Translation?	(L3/CO5/2M)
6	What is meant by Cross-Lingual Information Retrieval (CLIR)?	(L2/CO6/2M)
7	How do software resources support multilingual IR systems?	(L3/CO6/2M)
8	What are the criteria used for evaluating automatic summaries?	(L2/CO6/2M)
9	What is the role of competitions in automatic summarization research?	(L2/CO6/2M)
10	How do datasets contribute to the development of summarization systems?	(L3/CO6/2M)
10 Marks Questions (Long)		
S.No.	**Question**	**Levels/ CO'S/Marks**
1	Define Machine Translation and explain the major problems involved in Machine Translation systems?	(L2/CO5/10M)
2	Explain the current status of Machine Translation and discuss its practical usefulness in real-world applications?	(L3/CO5/10M)
3	What is the brief history of Machine Translation and how have different translation approaches evolved over time?	(L2/CO5/10M)
4	Explain the concept of language bridges in Anusaraka and illustrate how they support multilingual language access?	(L3/CO5/10M)
5	What is the structure of the Anusaraka system and how does its user interface support language access?	(L3/CO5/10M)
6	Define Multilingual Information Retrieval and explain the role of document preprocessing in IR systems?	(L2/CO6/10M)
7	Explain the methods used for evaluation in Information Retrieval and discuss the challenges involved?	(L3/CO6/10M)
8	What is multilingual automatic summarization and what are its objectives and importance?	(L2/CO6/10M)
9	What is the role of competitions and datasets in the development of multilingual summarization systems?	(L2/CO6/10M)
10	Explain the steps involved in building an automatic summarizer and illustrate the process?	(L3/CO6/10M)