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BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – B.Tech.(CSE)-AIML-2021/B.Tech.(CSE)-AIML-2022

Course Name – Speech and Natural Language Processing

Course Code - PEC-CSM602C

(Semester VI)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Define the term not following is NOT a common type of machine learning algorithm used in NLP.
 - a) Naive Bayes
 - b) Support Vector Machines (SVMs)
 - c) Decision Trees
 - d) K-Nearest Neighbors (KNN)
- (ii) Describe the main advantage of using neural networks in NLP compared to traditional machine learning algorithms
 - a) They require less data for training
 - b) They are easier to interpret and explain
 - c) They can automatically learn complex features from data
 - d) They are always more accurate than traditional algorithms
- (iii) Identify the informal name of Modus Ponens, a commonly used form of inference.
 - a) if-then reasoning
 - b) if-else reasoning
 - c) only-if reasoning
 - d) conclusion
- (iv) Select which of the following best describes the use of forward chaining inference systems in cognitive modeling
 - a) They are primarily utilized for data storage.
 - b) They are extensively employed in cognitive modeling tasks.
 - c) They are mainly employed for backward reasoning.
 - d) They are primarily used for mathematical calculations.
- (v) "He scored less in exam. He did not have proper study materials." Determine the type of discourse relation.
 - a) Result
 - b) Explanation
 - c) Parallel
 - d) Elaboration
- (vi) Quote in which of the following stages of NLP, does one draws parse tree?
 - a) Morphological
 - b) Syntactic
 - c) Semantic
 - d) Pragmatic
- (vii) Trace the word which would definitely be rejected by the English syntactic analyzer?

- a) Rahul is going to school
c) Rahul is in the school
- b) Rahul is coming from school
d) The Rahul the go to the school
- (viii) Convert to single morpheme of word "Boxes".
a) Box
c) Boxes
- b) Boxes
d) Boxing
- (ix) Indicate the notation for characterizing text sequences.
a) Regular expression
c) Semantic expression
- b) Syntactic expression
d) Specific expression
- (x) Trace and find the correct option after steaming over - Date, Dating, dated
a) Date
c) Dated
- b) Dating
d) Dat
- (xi) Identify from the following where the order of words matters.
a) Unigrams
c) At least Trigrams
- b) Bigrams
d) All n-grams
- (xii) Choose the type of parsing which is most suitable for real-time NLP applications where speed is crucial -
a) Dynamic programming parsing
c) Shallow parsing
- b) Probabilistic parsing
d) All of the mentioned
- (xiii) Dynamic programming parsing is apply for tasks like:
a) Named entity recognition
c) Text summarization
- b) Spell checking
d) Dependency parsing
- (xiv) The formal system for expressing statements and relationships in NLP is:
a) Syntax-Driven Semantic Analysis
c) Establish
- b) Description Logics
d) Practice
- (xv) A method that assigns meaning to syntactic structures in NLP is:
a) Illustrate
c) Interpret
- b) Semantic Attachment
d) Change

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Explain the meaning of " syntactic parsing " and the function it serves in NLP. (3)
3. Establish an explanation of " ambiguity " about the sentence construction. (3)
4. Determine the advantages and disadvantages of shallow parsing compared to full parsing for specific NLP tasks (e.g., information extraction). (3)
5. Predict the impact of Hidden Markov Model (HMM) work in NLP. (3)
6. Prepare Anaphora Resolution using Centering Algorithm for the text: "Alice went to the store. She bought milk. Then, Bob arrived home." (3)

OR

- Justify the Resolution structures the following text: "Jessica bought a new car. She is very happy with it." (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Explain how the Word Sense Disambiguation using Dictionary-Based Methods works. (5)
8. Describe the following methods of Word Sense Disambiguation. i.Dictionary-based, ii. Machine learning, iii. Statistical. (5)
9. Identify the Initial Center, Backward Center and Forward Center in the sentence: Alice went to the store. She bought milk. Then, Bob arrived home. (5)
10. Summarize the Reference Phenomena for the text: John bought a new car. He is very excited about it. The car is sleek and has advanced features. John plans to take it on a road trip next week.. (5)

11. Coreference Pairing is an important step in Coreference Resolution. Justify the statement. (5)
12. Discourse Analysis is beneficial for Information retrieval. Justify this statement. (5)

OR

Discourse Analysis is beneficial for Text summarization. Justify this statement. (5)

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