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18CS743

## Seventh Semester B.E. Degree Examination, June/July 2023
## Natural Language Processing

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

### Module-1

1  a. List and explain the challenges of Natural Language Processing. **(08 Marks)**
   b. Explain the role of transformational rules in transformational grammar with the help of an example. **(08 Marks)**
   c. Explain theta theory with suitable example. **(04 Marks)**

**OR**

2  a. Examine the n-gram model and derive its expression. Also using the bigram model, solve the following test case sentence :
   Training Set:
   <s> The Arabian Knights </s>
   <s> These are the fairy tales of the east </s>
   <s> The stories of the Arabian Knights are translated in many languages </s>

   Test sentence :
   <s> : The Arabian Knights are the fairy tales of the east </s>
   Apply the bigram model for the test sentence and estimate the probability. **(08 Marks)**
   b. Explain the C-structure and f-structure concepts used in language modeling with suitable example. **(08 Marks)**
   c. Explain the application of Natural Language Processing. **(04 Marks)**

### Module-2

3  a. Examine the importance of morphological parsing and explain the two-step morphological parser. **(10 Marks)**
   b. Explain the minimum edit distance algorithm and compute the minimum edit distance between EXECUTION and INTENTION. **(10 Marks)**

**OR**

4  a. Explain rule based and stochastic taggers. **(10 Marks)**
   b. Explain the probabilistic parsing. Also list out its disadvantages. **(10 Marks)**

### Module-3

5  a. Explain shortest dependency path hypothesis. Show various shortest dependency path among the relations in the "Jellisc created an atmosphere of terror in the camp by killing abusing and threatening the detainees". **(10 Marks)**
   b. Explain domain knowledge, domain concepts and knowledge roles with example. **(10 Marks)**

**OR**

6  a. Explain the learning framework architecture with a neat diagram. **(10 Marks)**
   b. Explain functional overview of InFact System with a neat diagram. **(10 Marks)**

## Module-4

7  a. Explain the Latent Semantic Analysis Feedback System. **(10 Marks)**
   b. Explain the functioning of Word Matching Feedback System. **(10 Marks)**

### OR

8  a. With a neat diagram, explain the transitions of a classification transducer. **(10 Marks)**
   b. Explain the evolutionary model for knowledge discovery from texts. **(10 Marks)**

## Module-5

9  a. Explain the design features of information retrieval system. **(10 Marks)**
   b. Explain Boolean and Vector space information retrieval models. **(10 Marks)**

### OR

10  a. Explain the Cluster and Fuzzy models of information retrieval systems. **(10 Marks)**
    b. Explain Wordnet with its applications. **(10 Marks)**

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