Paper / Subject Code: 42213 / Natural Language Processing (DLOC - III)

BE Sem VII (R2019, C Scheme) "AI&DS" Dec 2023

30/12/2023

Time: 3 hours **Max. Marks: 80**

N.B. (1) Question No. 1 is compulsory
(2) Assume suitable data if necessary
(3) Attempt any three questions from the remaining questions

Q.1 Solve any Four out of Five **20**

a. What is Natural language processing? Explain ambiguity in Natural languages with suitable examples

b. Explain in brief inflectional and derivational morphology with suitable examples

c. What is semantic analysis? Discuss different semantic relationships between the words

d. What is Named-Entity recognition? Define its types

e. What is rule base machine translation?

Q2 a. What is POS tagging? List different approaches to POS tagging. Explain any one approach in brief **10**

Q2 b. Discuss various stages involved in the NLP process with suitable examples **10**

Q3 a. Explain with suitable examples the following relationships between word meanings: Homonymy, Polysemy, Synonymy, Hyponymy **10**

Q3 b. Consider the following corpus: **10**

<s> She asks you to wait patiently </s>
<s> He wants me to help him </s>
<s> They expect us to arrive early </s>

List all possible bigrams. Compute conditional probabilities and predict the next word for the word "to"

Q4 a. What is Word Sense Disambiguation? Explain dictionary- based approach to Word Sense Disambiguation **10**

Q4 b. Explain Hobbs algorithm for pronoun resolution **10**

Q5 a. Explain edit distance algorithm with an example. Show working of the minimum number of operations required to transform "kitten" into "sitting" **10**

Q5 b. Explain Hidden Markov Model with example **10**

Q.6 Write a note on (any 2) **20**

a. Information Retrieval

b. Wordnet

c. Syntactic and Semantic Constraints on Coreference

d. Sentiment Analysis
