Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

M.Tech.(IT) E-1(2015 & Onwards)/(CSE Engg.)EL-I (2015 to 2017)
(Sem.–2)

NATURAL LANGUAGE PROCESSING

Subject Code : MTCS-204
M.Code : 72888

Time : 3 Hrs. Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. What are the components of a natural language processing system? Explain the steps involved in the process of natural language processing with suitable examples.

2. Write a detailed note on the computational structure of morphological paradigms.

3. Describe the following with suitable example :

   a. Reference resolution.

   b. Elements of a language.

4. How is the Naive Bayes machine learning algorithm applied as a method for learning the word senses for an ambiguous word? Give the formula and explain how the necessary parameters can be trained.

5. Describe how Hidden Markov Models are deployed for speech recognition.

6. What is the idea behind statistical machine translation? Explain the various statistical approaches to translation with their benefits and shortcomings.

7. List and define three parsing strategies. Given the grammar and lexicon below, show the final chart for the sentence *"Find the men in suits"*. after applying the bottom-up chart parser.

S → VP

VP → Verb NP

NP → NP PP

NP → Det Noun

PP → Prep Noun

Det → the

Verb → Find

Prep → in

Noun → men | suits

8. a. Discuss lexemes and word forms.

b. In English morphology, 'y' maps to 'ie' when preceded by a consonant and followed by the affix 's' Give a finite state transducer that implements this spelling rule, explaining the notation that is used. The transducer should accept the following pairings: party/party, parties/party^s, partying/party^ing. It should reject: partys/party^s, toies/toy^s.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.