

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 remaining questions

- Q.1** Any Four **20[M]**
- a** Differentiate between Syntactic ambiguity and Lexical Ambiguity. **[5M]**
  - b** Define affixes. Explain the types of affixes. **[5M]**
  - c** Describe open class words and closed class words in English with examples. **[5M]**
  - d** What is rule base machine translation? **[5M]**
  - e** Explain with suitable example following relationships between word meanings. **[5M]**  
Homonymy, Polysemy, Synonymy, Antonymy
  - f** Explain perplexity of any language model. **[5M]**
- Q.2 a)** Explain the role of FSA in morphological analysis? **[5M]**
- Q.2 b)** Explain Different stage involved in NLP process with suitable example. **[10M]**
- Q.3 a)** Consider the following corpus **[5M]**
- `<s> I tell you to sleep and rest </s>`  
`<s> I would like to sleep for an hour </s>`  
`<s> Sleep helps one to relax </s>`
- List all possible bigrams. Compute conditional probabilities and predict the next ord for the word “to”.
- Q.3 b)** Explain Yarowsky bootstrapping approach of semi supervised learning **[5M]**
- Q.3 c)** What is POS tagging? Discuss various challenges faced by POS tagging. **[10M]**
- Q.4 a)** What are the limitations of Hidden Markov Model? **[5M]**
- Q.4 b)** Explain the different steps in text processing for Information Retrieval **[5M]**
- Q.4 c)** Compare top-down and bottom-up approach of parsing with example. **[10M]**
- Q.5 a)** What do you mean by word sense disambiguation (WSD)? Discuss dictionary based approach for WSD. **[10M]**
- Q.5 b)** Explain Hobbs algorithm for pronoun resolution. **[10M]**
- Q.6 a)** Explain Text summarization in detail. **[10M]**
- Q.6 b)** Explain Porter Stemming algorithm in detail **[10M]**

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