

**Duration: 3hrs**

**[Max Marks: 80]**

- N.B.:** (1) Question No 1 is Compulsory.  
(2) Attempt any three questions out of the remaining five.  
(3) All questions carry equal marks.  
(4) Assume suitable data, if required, and state it clearly.

- Q1a)** Explain the applications of Natural Language processing. **5M**
- Q1b)** Illustrate the concept of tokenization and stemming in Natural Language processing. **5M**
- Q1c)** Discuss the challenges in part of speech tagging. **5M**
- Q1d)** Describe the semantic analysis in Natural Language processing. **5M**
- Q2a)** Explain inflectional and derivational morphology with an example **10M**
- Q2b)** Illustrate the working of Porter stemmer algorithm **10M**
- Q3a)** Explain hidden markov model for POS based tagging. **10M**
- Q3b)** Demonstrate the concept of conditional Random field in NLP **10M**
- Q4a)** Explain the Lesk algorithm for Word Sense Disambiguation. **10M**
- Q4b)** Demonstrate lexical semantic analysis using an example **10M**
- Q5a)** Illustrate the reference phenomena for solving the pronoun problem **10M**
- Q5b)** Explain Anaphora Resolution using Hobbs and Canterling Algorithm **10M**
- Q6a)** Demonstrate the working of machine translation systems **10M**
- Q6b)** Explain the Information retrieval system **10M**
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