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

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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. Homonymy, Polysemy, Synonymy, Antonymy	**[5M]**
f	Explain perplexity of any language model.	**[5M]**

Q.2 a) Explain the role of FSA in morphological analysis?

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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