

- iv. King of the jungle
- v. Faster than the light.
- b) What is a Noun Phrase? What are the different elements of Noun Phrases? (4)
- 7 a) Explain TBL Algorithm. How is it helpful in POS Tagging? (5)
- b) Give two examples of dialogue-based application in NLP. Mention any two problems associated with it? (4)

PART C

Answer all questions, each carries 3 marks.

- 8 State the three general principles that predict when a garden path sentence will arise. (3)
- 9 In what way the modal operators different from logical operators. Explain with an example. (3)
- 10 What is meant by thematic roles? Give at least two thematic roles which can be applied to the sentence – Jack broke the window with a hammer at 3.00 a.m. (3)
- 11 What is the process behind the ‘reduce action’ and ‘shift action’ in a Shift-Reduce Parser? (3)

PART D

Answer any two full questions, each carries 9 marks.

- 12 Explain the Hidden Markov model used in POS Tagging. How can Viterbi algorithm be used to optimise it? (9)
- 13 a) What is the use of lambda calculus in linking syntax and semantics? Construct a lambda expression for the proposition “John ate ice-cream”. Apply lambda reduction. (5)
- b). Explain with example the most common forms of movement in linguistic literature. (4)
- 14 a) Explain Statistical Word Sense Disambiguation. (5)
- b) Describe template matching for semantic interpretation. (4)

PART E

Answer any four full questions, each carries 10 marks.

- 15 a) Explain a simple technique used for identifying the antecedents of pronoun. (5)
- b) Represent the following sentences in First-Order Predicate Calculus (5)
 - i. Some physical objects are houses.
 - ii. Every house has an owner.

- iii. Peter does not own a house.
 - iv. Every vegetarian is intelligent.
 - v. Every cricket player owns at least one house in Mumbai.
- 16 a) What is segmentation and cue phrases in discourse? (5)
b) How does tense and aspect help the discourse segment? (5)
- 17 a) What are the important components of an intelligent agent? (7)
b) What is meant by belief states in knowledge base? (3)
- 18 a) Explain Rule-based Machine Translation with neat architectural diagrams. (5)
b) How does the Example-based Machine Translation work? (5)
- 19 Give differences between the following in terms of text summarization (10)
procedures
- i. Indicative vs Informative summary
 - ii. Generic vs User-oriented summary
 - iii. Single Document vs Multi-Document
 - iv. Extracts vs Abstracts
- 20 a) Write about any 2 classical models of Information retrieval. (6)
b) Differentiate between shallow and deep approaches of text summarization. (4)
