

Registration No :

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

Total Number of Pages : 02

B.Tech
PIT6J004

**6th Semester Regular Examination 2018-19
NATURAL LANGUAGE PROCESSING**

BRANCH : IT

Time : 3 Hours

Max Marks : 100

Q.CODE : F642

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Short Answer Type Questions (Answer All-10) (2 x 10)

- a) Differentiate between bigram and trigram.
- b) Define the N-grams model.
- c) What are the problems with PCFG?
- d) What do you understand by ambiguity?
- e) Differentiate between top-down parsing and bottom-up parsing.
- f) What do you mean by lemmatization?
- g) Give a detailed account of similarities and differences among the following set of lexemes: imitation, synthetic, artificial, fake and simulated.
- h) Differentiate between rule-based tagger and stochastic tagger.
- i) List the various issues of machine translation system.
- j) What is discourse planning?

Part- II

Q2 Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- a) Discuss the relative advantages and disadvantages of partial versus full parsing.
- b) Discuss how to augment a parser to deal with input that may be incorrect, such as spelling errors or speech recognition misrecognitions.
- c) Discuss various relations among the word senses.
- d) What do you mean by anaphora resolution? Discuss its types and applications?
- e) How to do a discourse analysis? Explain with example.
- f) What is rule based machine translation? Explain its types.
- g) What do you understand by principle of compositionality? What does it mean for a syntactic constituent to have a meaning? Develop a set of grammar rules and semantic attachments to handle predicate adjectives such as the one following:
 - (i) Flight 101 from Bhubaneswar is expensive.
 - (ii) Mexi's restaurant is cheap.
- h) Why is word sense disambiguation important for language technology? Explain with examples.
- i) Write short note on WordNet.
- j) Discuss various knowledge sources in WSD.
- k) Discuss any two advanced applications of NLP.
- l) How to deal with spelling error detection and correction? Explain.

Part-III

Long Answer Type Questions (Answer Any Two out of Four)

- Q3** Consider the following Grammar and Lexicon. **(16)**
S -> NP VP | Aux NP VP | VP
NP -> Pronoun | Proper-Noun | Det Nominal
Nominal -> Noun | Nominal Noun | Nominal PP
VP -> Verb | Verb NP | Verb NP PP | Verb PP | VP PP
PP -> Preposition NP
Det -> that | this | a
Noun -> book | flight | meal | money
Verb -> book | include | prefer
Pronoun -> I | she | me
Proper-Noun -> Houston | NWA
Aux -> does
Preposition -> from | to | on | near | through
a) Derive the parse tree for the sentence book that flight.
b) Derive the expanding bottom-up search space for the sentence book that flight.
c) Derive the final phase of the search with the correct parse tree.
d) What is ply? Explain in the context of above Grammar and Lexicon.
- Q4** Explain the history of NLP application development and various phases of NLP. **(16)**
- Q5** Explain Earley parser and CYK parser with suitable examples. **(16)**
- Q6** Explain the natural language generation system architecture with neat sketch diagram. **(16)**