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Total Number of Pages : 02

B.Tech
PCS6J003

6th Semester Regular / Back Examination 2018-19

NATURAL LANGUAGE PROCESSING

BRANCH : CSE

Time : 3 Hours

Max Marks : 100

Q.CODE : F641

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)

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

Part- II

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

- Discuss the relative advantages and disadvantages of partial versus full parsing.
- Discuss how to augment a parser to deal with input that may be incorrect, such as spelling errors or speech recognition misrecognitions.
- Discuss various relations among the word senses.
- What do you mean by anaphora resolution? Discuss its types and applications?
- How to do a discourse analysis? Explain with example.
- What is rule based machine translation? Explain its types.
- 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.
- Why is word sense disambiguation important for language technology? Explain with examples.
- Write short note on WordNet.
- Discuss various knowledge sources in WSD.
- Discuss any two advanced applications of NLP.
- 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)**