

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2125)

15263

B. Tech 7th Semester Examination
Natural Language Processing (OS)
IT-7001

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all selecting one question each from section A, B, C, and D. Section E is compulsory. Use of non-programmable calculators is allowed.

SECTION - A

1. Explain what type of knowledge of language is needed to understand the complex language behaviour. Describe four paradigms developed during 1970-83. (20)
2. Draw FSA and the regular expression for the following set of strings.
baa!
baaa!
baaaa!
baaaaa!
baaaaaa! (20)

SECTION - B

3. (a) Discuss how you would augment a parser to deal with input that may be incorrect, such as spelling errors or misrecognitions from a speech recognition system. (10)

[P.T.O.]

2

15263

- (b) Discuss the relative advantages and disadvantages of partial parsing versus full parsing. (10)
4. (a) Define the relevance of feature structure . Based on the feature structure redefine the following grammar.
 $S \rightarrow NP VP$ (10)
- (b) Describe the unification constraints applied to the following linguistic phenomena: agreement, grammatical heads, subcategorization, and long distance dependencies. (10)

SECTION - C

5. Consider the following scenario.

Waitress 1 turns to see a customer with his coffee cup in his hand, waving it around slightly. She also sees a ham sandwich on his plate. She turns to waitress 2 and exclaims: "Get the cheese sandwich some more joe." Waitress 2 looks around the room near waitress 1, identifies the appropriate customer, and immediately serves him some more coffee.

Build computational models of all three scenario participants. Also extract necessary desiderata for the development of computational models of intention-recognition required for developing an intelligent system. (20)

6. Consider the following sentences

- (i) I ate.
- (ii) I ate a cheese sandwich.
- (iii) I ate a cheese sandwich at my desk.
- (iv) I ate at my desk.
- (v) I ate lunch.
- (vi) I ate a cheese sandwich for lunch.
- (vii) I ate a cheese sandwich for lunch at my desk.

Formulate predicate-argument structure to represent the meaning of above mentioned events focusing on verb "eat".

(20)

SECTION - D

7. Describe syntactic and semantic constraints on coreference with the help of suitable examples (20)
8. Describe pronoun resolution algorithm using following sentences:
 - (i) Mr. Smith saw a driver in his truck.
 - (ii) Mr. Smith saw a driver of his truck. (20)

SECTION - E

9. Answer the following questions:
 - (a) Describe non-deterministic automata.
 - (b) Give an example of HMM tagging.
 - (c) What is a regular expression?
 - (d) What is a prepositional phrase?
 - (e) What is text schemata used for rhetorical relations?
(4×5=20)