Code No: RR420503 **Set No. 1**

IV B.Tech II Semester Regular Examinations, Apr/May 2008
NATURAL LANGUAGE PROCESSING
(Computer Science & Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain with an example the augmented transition Matrix (ATN).
   (b) "Archie as broken the window with the massive stone " Parse and represent the sentence in ATN. [8+8]

2. (a) Given the prolog based grammar, show a trace in the format with all the steps, current steps, backup states of the proof that the following is a legal sentence

   "the john ate the cat"

   i. s(p1,p3) :- np(p1,p2),vp(p2,p3)
   ii. np(p1,p3) :- art(p1,p2),n(p2,p3)
   iii. np(p1,p3) :- name(p1,p3)
   iv. pp(p1,p3) :- p(p1,p2),np(p2,p3)
   v. vp(p1,p2) :- v(p1,p2)
   vi. vp(p1,p3) :- v(p1,p2),np(p2,p3)
   vii. vp(p1,p3) :- v(p1,p2),pp(p2,p3)

   (b) Consider the following grammar
   S→ ADJS N
   S→ N
   ADJS → ADJS ADJ
   ADJS → ADJ
   Lexicon : ADJ :red, N:House

   i. What happens to the top-down depth-first parser operating on this grammar Trying to parse the input red red? In particular, state whether the parser Succeeds, fails or never stops.
   ii. How about a top-down breadth -first parser operating on the same input red red?
   iii. How about a top-down breadth first parser operating on the input red house?
   iv. How about a bottom-up depth-first parser on red house? [8+8]

3. (a) What are Auxiliary or Helping Verbs?
   (b) Discuss all the kinds of Auxiliaries with example?
   (c) Give some examples of multiple auxiliary? [4+6+6]

4. (a) Explain in detail the forward chaining & backward chaining in IF then reasoning

(b) Explain

i. Abduction

ii. Resolution [10+6]

5. Give the steps involved in a tree search algorithm. [16]

6. (a) What are the two fundamental operations to the discourse model?

(b) With the help of diagram, Explain the operation & relationships of discourse model.

[8+8]

7. Explain with Examples

(a) Simplification Rules

(b) Translation Rules [8+8]

8. (a) What do you mean by Natural Language generation (NLG)?

(b) What is Canned Text? Give Examples.

(c) What is template filling? Explain?

(d) What is Aggregation? [3+4+4+5]

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Code No: RR420503 **Set No. 2**

IV B.Tech II Semester Regular Examinations, Apr/May 2008
NATURAL LANGUAGE PROCESSING
(Computer Science & Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What do you mean by Black Box Evaluation?
   (b) What do you mean by White Box Evaluation?
   (c) Explain with an example "Evaluating Language Understanding systems"? [4+4+8]
2. (a) Draw the parse tree for the following sentences?
   "the visitor saw the old painting in the den"
   (b) Discuss the steps involved in eliciting the meaning from the sentences? [8+8]
3. Explain briefly about
   (a) Language Knowledge
   (b) Background Knowledge
   (c) General World Knowledge
   (d) Context Knowledge [4×4=16]
4. (a) What do you mean by Unification of two literals?
   (b) Discuss the resolution refutation procedure?
   (c) List the steps involved in answering questions by using resolution? [4+6+6]
5. (a) Describe in detail with an example a set of primitives acts?
   (b) List & Explain the set of conceptual tenses proposed by Schank. [8+8]
6. (a) What are the two fundamental operations to the discourse model?
   (b) With the help of diagram, Explain the operation & relationships of discourse model. [8+8]
7. Write short notes on:
   (a) Analysis of the input
   (b) Transfer
   (c) Generation of the Output
   (d) Interlingua [4×4=16]
8. (a) Explain why RSST has had a greater influence on NLG?

(b) What information the knowledge base need to contain to make the appropriate choices in your network? [8+8]

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Code No: RR420503 **Set No. 3**

IV B.Tech II Semester Regular Examinations, Apr/May 2008
NATURAL LANGUAGE PROCESSING
(Computer Science & Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Discuss in detail the different forms of Knowledge relevant for Natural Language Understanding?
   (b) Explain Syntax, Semantics & Pragmatics. [10+6]
2. (a) What is GAP Threading?
   (b) What are extra position grammar?
   (c) Distinguish between bounded (Local) movement and unbounded (non local) movement? [4+4+8]
3. (a) Explain the two kinds of grammar Equivalence?
   (b) What do you Mean by Domain specific knowledge? Explain with example. [8+8]
4. (a) Discuss in detail procedural inference techniques and declarative inference Technique found in knowledge representation?
   (b) Discuss with example knowledge representation based on First-order predicate calculus. [8+8]
5. (a) Define Pragmatics? Give example.
   (b) What is
      i. Disclosure
      ii. Monologue
      iii. Dialogue
      iv. HCI
   (c) Explain the two fundamental reference operations & relationships of Disclosure model? [4+8+4]
6. (a) Describe the steps taken to resolve a pronoun.
   (b) Illustrate the operation of the above by example
   John saw a beautiful Acura Integra at the dealership.
   He showed it to bob. He brought it . [8+8]
7. (a) Write . (. (, . (b,[])) , .(c,[])) in ordinary list notation (with square brackets and commas and draw a tree diagram of it?

(b) Draw both a tree diagram ,and a cell and pointer diagram like the diagram above ,for each of the following terms
F(a+b)+g(c,d) f(f(f(f(f(g))))) 2+3*4
Note that to represent a number, prolog does not use a pointer instead it stores the number itself in the cell, note also that unlike the symbol table, the tree diagram of f(f(a)) contains f in two different places. [16]

8. (a) What do you mean by Natural Language generation (NLG)?

(b) What is Canned Text? Give Examples.

(c) What is template filling? Explain?

(d) What is Aggregation? [3+4+4+5]

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Code No: RR420503 **Set No. 4**

IV B.Tech II Semester Regular Examinations, Apr/May 2008
NATURAL LANGUAGE PROCESSING
(Computer Science & Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Discuss in detail the different forms of Knowledge relevant for Natural Language Understanding?
   (b) Explain Syntax, Semantics & Pragmatics. [10+6]
2. (a) Discuss the two Useful tasks that the language processing problems are divided?
   (b) Explain Lexical Processing (Lexicon) with example.
   (c) What is Lexical disambiguation? [4+4+8]
3. Describe in detail the complex notations of syntax & grammar with examples.
   (a) Consistency
   (b) Grammatical Relations
   (c) Sub categorization & dependencies
   (d) Relationships [4×4=16]
4. Explain in detail about
   (a) Semantics of FOPC
   (b) Variables & Quantifiers
   (c) Complete
   (d) Plausibility Reasoning [4×4=16]
5. Explain in detail the five types of referring expressions? Give example to each. [16]
6. Describe in detail with an example
   (a) Indefinite noun phrases
   (b) Definite Noun Phrases [16]
7. Write short notes on:
   (a) Analysis of the input
   (b) Transfer
   (c) Generation of the Output
   (d) Interlingua [4×4=16]

8. (a) List & Explain in detail the three fundamental concerns in generations?
   (b) Explain the procedure for generation in a fully specified system networks.

[6+10]

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