

IV B.Tech II Semester Regular Examinations, Apr/May 2006
NATURAL LANGUAGE PROCESSING
(Computer Science & Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What are Transition Networks?
(b) Represent a noun Phrase segment of a transition network
(c) "Kathy Jumped the horse"
Parse the above sentence both using top-down & bottom-up Methods. [4+4+8]
2. (a) Explain with an example the elements of the simple noun phrases.
(b) What is Morphology?
(c) What are Inflectional form & Derivational forms? [8+4+4]
3. Write short notes on:
(a) Context free rules
(b) Phrase structure grammar
(c) Backus Norm Form
(d) Examples of Context free grammar [4×4=16]
4. Discuss the knowledge representation structure frames using the objects Slots & roles for House, Terrorist. [16]
5. (a) What is tree adjoining grammer(TAG)?
(b) Explain briefly about TAG derivation Tree. [8+8]
6. (a) List all the types of referencing Expressions?
(b) Briefly describe the basic reference phenomena? [8+8]
7. (a) Why Translation is Hard? Justify Your Answer with Examples?
(b) Discuss in detail the two Kinds of processes in Morphology? [8+8]
8. (a) List & Explain the choices made by the generations systems?
(b) Explain with diagram the reference Archicture for NLG systems. [8+8]

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1. Explain in detail, why each of the following sentences is ill formed? State what rules have been violated ?
 - (a) He barked the wrong tree up.
 - (b) she turned water in to wine
 - (c) Don't take many all the cookies
 - (d) I feel floor today
 - (e) They all laughed the boy

[16]
2.
 - (a) Discuss with an example the work forms?
 - (b) What is a tense? List the basic tenses with example?
 - (c) What do you mean by progressive tenses? List all the progressive tenses with structure and example?

[4+4+8]
3.
 - (a) What is a word? Explain & Give Example?
 - (b) What are its two types?
 - (c) Explain why Morphological Analysis?

[5+5+6]
4. Using the frame based representation define the action DRIVE that corresponds to the sense of Verb in
I drove to School today

[16]
5.
 - (a) Explain & describe a centering based algorithm for pronoun Interpretation.
 - (b) List the rules used by the algorithm.

[10+6]
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 in detail the sample session with ELIZA and the Machine?

[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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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) Discuss the movement handling technique
 "The Hold mechanism in ATN's" [8+8]
 (b) Discuss the two approaches to handle questions in ATN's? [8+8]

3. Describe in detail several sources of knowledge that are used in decoding the information. [16]

4. (a) Give a plausible logic based representation for the meaning of the following sentences, focusing on the interpretation of the quantifiers. If the sentence has a collection / distributive ambiguity, give both interpretations
 - i. Several men Cried
 - ii. Several men in the book met in the park
 - iii. All but three men brought a suit
 (b) Classify the indicated verb phrases in the following sentences as to whether they describe state, an activity, an achievement or an accomplishment. Justify your answers with some examples that demonstrate their behavior. Discuss any problems that arise in your classification.

Jack ran to the store
 Jack was running to the store
 Jack hated running
 Jack runs everyday
 Jack stopped running when he broke this leg [8+8]

5. (a) List & Define several important components of intelligent agents?
 (b) What do you mean by speech act?
 (c) What is Knowledge base and Belief Base? [6+4+6]

6. Describe in detail with an example
 - (a) Indefinite noun phrases
 - (b) Definite Noun Phrases [16]

7. What is Template Matching? Discuss in detail the Machine proposed by the Alen Turning? [16]

8. Explain:

(a) Functional Description

(b) Bidirectional Grammar

(c) Fully Unified FD

(d) Disclosure Planning

[4×4=16]

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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 in detail with examples?
 - i. Pronoun & its types
 - ii. Properties of Verb(b) Discuss fore-tracking parser & Backtracking Parser? [8+8]
3. Describe in detail several sources of knowledge that are used in decoding the information. [16]
4. Natural Language Understanding requires a capability to represent and reason about knowledge of the world? Justify? [16]
5. Explain:
 - (a) Coherence
 - (b) Co reference
 - (c) Discourse segment
 - (d) Sub ordinary relations & coordinating relations [4×4=16]
6. Describe in detail with an example
 - (a) Indefinite noun phrases
 - (b) Definite Noun Phrases [16]
7. Explain with Examples
 - (a) Simplification Rules
 - (b) Translation Rules [8+8]
8. (a) List & Explain the choices made by the generations systems?
(b) Explain with diagram the reference Architecture for NLG systems. [8+8]
