53 (IT 814) NLPR

2016

NATURAL LANGUAGE PROCESSING

Paper : IT 814 (Back)

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. Answer briefly : 4×5=20

   (a) Write about *three* NLP applications with their input and output specifications.

   (b) Differentiate between Natural Language processing and Natural Language Generation.

   (c) Explain the various evaluation strategies for Natural Language Processing systems.

(d) What is language morphology ? Discuss *two* basic types of language morphology.

2. (i) Explain with proper example the various levels of natural language analysis. 10

(ii) State the role of knowledge in natural language processing. Explain various categories of knowledge use in NLP. 3+7=10

3. (i) What is a parser ? Discuss Top-Down and Bottom-up parsing approaches with proper examples. 2+8=10

(ii) Define the terms with proper examples Morpheme, Affix, Morphology and Inflectional morphology. 10

4. (i) What is Context-Free grammar ? Explain the components and characteristics of a general purpose grammar. 4+6=10

(ii) Consider the following Context-Free grammar : 10

$S \rightarrow NP\ VP$	$N \rightarrow$ dog	$V \rightarrow$ sees
$NP \rightarrow Det\ N$	$N \rightarrow$ cat	$V \rightarrow$ hates
$VP \rightarrow V$	$N \rightarrow$ mouse	$V \rightarrow$ sneezes
$VP \rightarrow V\ NP$	$Det \rightarrow$ the	

Which of the following sentences are recognised by this grammar and why ?

(a) The dog sneezes the cat.

(b) The mouse hates.

(c) The cat the mouse hates.

(d) The mouse hates the mouse.

5. (i) What is transition network ? Explain how we can represent the sentence information using transition network. 4+6=10

(ii) Discuss Recursive transition network with proper diagram and state how it differs from transition network. 10

6. *(i)* What are the objectives of evaluation of NLP system? Explain various evaluation strategies. 5+5=10

(ii) Explain the terms Morphological ambiguity, Lexical ambiguity and Syntactic ambiguity. 10