M.Tech (CSE) 2nd Semester Examination
June 2013
Grammar and Natural Language Processing
Subject Code: CSL-508

Time Allowed: 03 hours. Maximum Marks: 100

Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.

Note: Attempt any five questions and all questions carry equal marks.

Section – A

1(a) Explain Chomsky classification of grammar in detail with suitable example. Also show the relationship between languages and their machines. (10)

(b) Convert the following grammar into GNF
E->E+T|T, T->T*F|F, F-> (E)|a (10)

2. (a) Design a Turing machine for palindrome over {a,b} . Also show the acceptability of a string. (10)

(b) What do you mean by halting problem? Explain in detail. (5)

(c) Explain universal Turing machine as undecidable problem. (5)

3. (a) Explain Church Turing hypothesis. (10)

(b) What do you recursive and recursive enumerable languages? Explain in detail. (10)

Section – B

4. (a) What do you mean by regular expression? Explain Range, Grouping, Disjunction and Anchors with suitable example. (10)

(b) What are the difference between finite state automata and finite state transducers? Explain orthographic rules and make the lexicon transducer for acceptance “boxes” with e-insertion rule. (10)

5. (a) What do you mean by parsing? What are the difference between top-down and bottom up parsing? Explain context free rules and trees. (10)

(b) Explain tagsets for English of Penn Treebank tagsets. Use the Penn Treebank tagset to tag each word in the following sentences: (10)

(i) It is a nice night.
(ii) This crap game is over a garage in Fifty-second Street.

6. (a) What do you mean by forward chaining and backward chaining? (10)

(b) Explain syntax driven semantic analysis in detail. (10)