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06IS662

Sixth Semester B.E. Degree Examination, Dec.2013/Jan.2014
Compiler Design

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Briefly explain phases of compiler with example. **(10 Marks)**
b. Explain about commonly used compiler construction tool. **(06 Marks)**
c. Discuss the design objectives of compiler optimization. **(04 Marks)**

2 a. Briefly explain the role of lexical analyzer. **(08 Marks)**
b. Describe the tanguages denoted by the following regular expressions:
i) (a/b)* ii) a/a*b **(04 Marks)**
c. Explain in brief about transition diagrams. **(05 Marks)**
d. Draw transition diagram for relop. **(03 Marks)**

3 a. With example, explain the formal definition of context – free grammar. **(10 Marks)**
b. What do you mean by parse tree and draw the sequence of parse tree for the derivation
$E \Rightarrow -E \Rightarrow -(E) \Rightarrow -(E + F) \Rightarrow (id + E) \Rightarrow -(id + id)$. **(04 Marks)**
c. Briefly explain about shift-reduce parsing. **(06 Marks)**

4 a. What is the role of LR parsers? **(06 Marks)**
b. With neat figure explain about LR-parsing algorithm. **(08 Marks)**
c. Write the canonical collection of sets of LR(0) items for the grammar.
$S \rightarrow L = R/R$
$L \rightarrow * R/id$
$R \rightarrow L$. **(06 Marks)**

PART – B

5 a. Explain about syntax – directed definition with example. **(08 Marks)**
b. Construct a syntax tree for a – 4 + c. **(03 Marks)**
c. List out the steps present in the construction of syntax tree a – 4 + c. **(03 Marks)**
d. Explain about syntax – directed translation schemes. **(06 Marks)**

6 a. Draw and construct Direct Acyclic Graphs (DAG) for the expression
a + a * (b – c) + (b – c) + d. **(08 Marks)**
b. Explain briefly about three-address code. **(12 Marks)**

7 a. Briefly explain about static versus dynamic storage allocation. **(06 Marks)**
b. Explain about activation record. **(04 Marks)**
c. What are the design goals for garbage college? **(05 Marks)**
d. Enumerate the performance metric that must be considered when designing a garbage collector. **(05 Marks)**

8 a. Explain the design issues of a code generator. **(10 Marks)**
b. Write a short note on:
i) DAG representation of basic blocks.
ii) Simple code generator. **(10 Marks)**

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