02-16

(Please write your Exam Roll No.) Exam Roll No. .....

END TERM EXAMINATION

SIXTH SEMESTER [B.TECH/M.TECH] MAY-JUNE 2016

Paper Code: IT-308 Subject: Compiler Design

Time: 3 Hours Maximum Marks: 60

Note: Attempt any five questions. All questions carry equal mark.

(a) Design a derivation tree for the following grammar:
$E \to E+E|E-E|E/E|E*E|a|b$. Also obtain the left most and rightmost derivation tree for the string "$a+b*a+b$".
(b) Find whether the below mentioned grammar is ambiguous or not:-
$S \to AB/aaB$, Aa, B → b

(a) What is the role of Syntax Directed Translation scheme in Compiler Design?
(b) Consider the grammar:
$E \to TE'$, E'→ +TE;/ ∈, T → FT, T'→ *FT'/ ∈, F → (E)/ *id* Find the FIRST and FOLLOW functions for the above grammar.

Construct LL(l) passing table for the following grammar.
$S \to aB|aC|Sd|Se$
$B \to bBc|f$
$C \to g$

What is the role of Intermediate code generation in overall compiler design?

Construct the DAG for the following basic block
$d = b*c$
$e = a+b$
$b = b*c$
$a = e-d$
Explain the need of optimization with at least two examples.

Why symbol table is required in compiler? In which part of the memory it is stored? Discuss the main functions of symbol table. Name the data structures used for symbol table organization. Explain how scope information is represented by symbol table organization using the hash table.

What is peephole optimization? Write a short note on Code Generator. What is the role of the compiler construction tools? Name some of the compiler construction tools.

Explain the concept of common sub-expression elimination with the help of an example. For the expression (4 * 7+1) *2 construct an annotated parse tree.

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449