R13

Code No: 115AP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November - 2015
COMPILER DESIGN
(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A (25 Marks)

1.a)	Define Cross Compiler.	[2]
b)	Eliminate immediate left recursion for the following grammar: E->E+T | T T->T* F | F F-> (E) | id	[3]
c)	List the rules for computing FOLLOW SET.	[2]
d)	Define CLOSURE (I).	[3]
e)	What is a symbol table?	[2]
f)	What does a semantic analysis do?	[3]
g)	Define basic block in a flow graph.	[2]
h)	What is a DAG? Mention its applications	[3]
i)	Generate a object code for following statements a = b + c; d = a+e	[2]
j)	Mention the properties that a code generator should possess.	[3]

PART - B (50 Marks)

2. What are the various phases of the compiler? Explain each phase in detail. [10]

OR

3. Construct the predictive parser for the following grammar: [10]
S->(L)/a
L->L,S/S

4. Find the SLR parsing table for the given grammar:
E->E+E | E*E | (E) | id.
And parse the sentence (a+b)*c. [10]

OR

5. Construct an LALR Parsing table for the following grammar: [10]
E-> E+T |T
T-> T*F|F
F->id

6. Generate intermediate code for the following code segment along with the required syntax directed translation scheme:
if(a>b)
x=a+b
else
x=a-b
Where a and x are of real and b of int type data. [10]

OR

7. Give syntax directed translation scheme for simple desk circulator. [10]

8. Explain the following with an example:
a) Redundant sub expression elimination
b) Frequency reduction
c) Copy propagation. [3+3+4]

OR

9. Optimize the following code using various optimization techniques: [10]
i=1; s=0;
for (i=1; i<=3; i++)
for (j=1;j<=3;j++)
c[i][j]=c[i][j] + a[i][j] + b[i][j]

10. Explain in detail about machine dependent code optimization techniques. [10]

OR

11. Give an example to show how DAG is used for register allocation. [10]

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