COLLEGE OF ENGINEERING PUNE

DEPARTMENT OF COMPUTER ENGINEERING & TECHNOLOGY

ESE Academic Year 2013-14

CT 401: COMPILER CONSTRUCTION

Class: Final Year Btech | Branch: Computer Engineering

Semester: VII | Duration: 3hr

INSTRUCTIONS:

1. All questions are compulsory.
2. Figures to right indicate max marks. Max marks=60

PART-A (5 x 3M = 15 M)

1. Compare syntax tree and parse tree.
2. Given the syntax directed definition below with the synthesized attribute val, draw the annotated parse tree for the expression (3+4)*(5+6):

L->E	L.val=E.val
E->T	E.val=T.val
E->E1+T	E.val=E1.val+T.val
T->F	T.val=F.val
T->T1*F	T.val=T1.val*F.val
F->(E)	F.val=E.val
F->digit	F.val=digit. Lex.val.

3. Explain format of an activation record.
4. For the following assignment statements

   x = a[i] + 1

   convert into three address code and then convert the TAC into machine code.
5. What are the advantages and disadvantages of LR parsers.

PART-B (5 X 9 M = 45 M)

1 Give the SLR parsing table for the following grammar:
S->Ac|bAc|Bc|bBa
A->d. B->d
(S,A,B are nonterminal. a, b,c,d are terminal).

2 Write the quadruples, triples and indirect triples for the following expression and explain

-((A / B) + B) * (C + (D * E)) - (A + B + C)

3 Explain syntax directed translation. Give Syntax directed definition to

translate infix Expressions to Postfix Expressions.

4 Write notes on

(I) LEX and YACC

(II) operator precedence parsing.

5. For the following code generate three address code and then construct flow graph.

```
for (i=1; i<=10 ; i++)
  for(j=1; j<=10; j++)
     a[i][j]=0;
for(i=1; i<=10 ; i++)
     a[i][i]=1;
```