DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VI [INFORMATION TECHNOLOGY]
SUBJECT: (IT 608) LANGUAGE TRANSLATOR

Examination	**: Second Sessional**	**Seat No.**	**:**
Date	**: 11/02/2013**	**Day**	**: Monday**
Time	**: 11.30 to 12.45**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed.
(a) YACC is ____ (SLR/LALR/LR) parser generator tool. **[1]**
(b) What is a "handle"in bottom up parsing? Explain with example. **[1]**
(c) In *single pass compiler*, the variable names are inserted into symbol table during _____while in two pass compiler it is during ____. [Lexical analysis/semantic analysis/syntactic analysis/code generation/ NO phase]. **[2]**
(d) Justify: Every S-attributed grammar is L-attributed grammar. **[2]**
(e) An ambiguous grammar can never be LR (k) for any k. State True/False with Justification. **[2]**
(f) Two major operations on a symbol table are ___ &_____,while two special operations on block structured symbol table are _____ & _____ [insertion, deletion, lookup, updation, set ,reset] **[2]**
(g) Is this grammar S->(L) | a L->L,S | S valid operator precedence grammar? Why? **[2]**

Q.2 Attempt ***Any Two*** from the following questions. **[12]**
(a) Consider the following code fragment for block structured language. Show the working of set and reset operations. [6]

Figure 1:

```
B1:
{        int x;
        B2:{     Int z,y;
                 Char a;
                 B3: Ablock( ):
                 {    int ans,a1,a2;  ans=B4( int a1,int a2);     }
                 B4:Bblock ( int m, int n)
                 {    int a3;    a3= m+n;     }
            }
}
```

(b) Draw diagrams using stack structured & stack implemented tree structured (individual approach) organization technique for symbol table (for all set and reset operations) for the code given in Figure 1. [6]
(c) Obtain the precedence functions for the following grammar and trace operator precedence parser for the following input: " id-id/id "
E->E - E | E / E | id [Note: "| "is a rule separator.] [6]

Q.3 (a) Is following grammar suitable for parsing by LR parser? Justify. **[8]**
$E \rightarrow T + E \mid T$
$T \rightarrow int * T \mid int \mid (E)$ Parse the string "int * int $", using the table .
(b) A robot is designed to move in a given sequence of instruction in one step .The direction can be East, West, North or South. Write Syntax Directed Definition to find out the current position after a sequence of instructions. Also show decorated tree for the instruction "Begin North East East East West". **[4]**

OR

Q.3 (a) Is following grammar suitable for parsing by SLR parser? Justify. **[6]**
$S' \rightarrow S\#$ $S \rightarrow XYa$ $X \rightarrow a \mid Yb$ $Y \rightarrow \wedge \mid c$
Parse the string "aa", using the table.
(b) Consider the following grammar, which generates expressions formed by applying "+" to integer and floating point constants. If one of the expression has datatype int, it is comverted to float automatically. E-> E + T | T T -> num . num | num **[6]**