DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VI [IT]
SUBJECT: (IT608) LANGAUGE TRANSLATOR

Examination	**:Block Exam(Regular)**	**Seat No.**	**: _____**
Date	**: 06 / 04 /2018**	**Day**	**: Friday**
Time	**: 03.00 to 04.15**	**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) Match the following List I with appropriate option in List II: **[2]**

List I	List II
(a) Activation record	(1) Life time of binding
(b) Reference counts	(2) Subroutine call
(c) Three address code	(3) Garbage collection
(d) Scope of declaration	(4) Code-improving transformations

(b) Give syntax tree/DAG (directed acyclic graph) for following statement. **[2]**
X = (b + c) / (b / -c) * (b + c)

(c) Which of the following grammar rules violate the requirements of an operator grammar? P, Q, R are non-terminals, and r, s, t are terminals. **[2]**
1. P→QR 3. P→^
2. P→QsR 4. P→QtRr
A. 1 only C. 1 and 3 only
B. 1 and 2 only D. 3 and 4 only

(d) Explain the advantage of precedence function table over the precedence relation table in operator precedence parser in detail **[2]**

(e) What is a "handle "in bottom up parsing? Explain with example. **[2]**

(f) Bottom up parser is doing rightmost derivations in reverse. **[2]**

Q.2 Attempt the following questions.

(a) The following program fragment is written in a programming language that allows global variables and does not allow nested declarations of functions. **[6]**

```
global int i = 100, j = 5;
void P(x)
{   int i = 10;
    print(x + 10);
    i = 200;
    j = 20;
    print(x);
}
main()
{   P(i + j);
}
```

a) If the programming language uses static scoping and call by need parameter passing mechanism, What are the values printed by the above program? Explain clearly.
b) If the programming language uses dynamic scoping and call by Name parameter passing mechanism, What are the values printed by the above program? Explain clearly.

(b) Consider the grammar with the following translation rules and E as the start symbol. **[6]**
E→ E1#T{E.value=E1.value*T.value}
|T{E.value=T.value}
T→ T1&F{T.value=T1.value+F.value}
|F{T.value=F.value}
F→ num {F.value = num.value}
Compute E.value for the root of the parse tree for the expression: **10 # 3 & 5 # 6 & 6.**
Annotated tree

Q.3 (a) **Grammar G1: S→iSeS | iS |a** **[6]**
Consider the above Grammar G1.
1. Check whether it is ambiguous or not.
2. Construct SLR (1) parsing table.
3. Show the conflicts and resolve it.

Parse the string and show that how your decision is correct.

(b) Obtain the precedence functions for the following grammar and trace operator precedence parser for the following input: "id + id * id". **[6]**
E→E + E | E * E | id