Compiler Design (BCS-2604)

Time: 3:00 Hours | Maximum Marks: 60

SECTION A

Q1. Attempt all parts of the following: 1*8=8

a. What is role of Code Optimization in Compiler?
b. Differences among Compiler, Interpreter and Assembler.
c. Short notes on Bootstrapping techniques.
d. Differences among Left recursion and Left factorization.
e. Short notes on Evaluation order of semantics Action in SDD.
f. Explain all the forms of Intermediate Code.
g. DAG for expression (a*b) + (a*b) using mknode and mkleaf function.
h. Short notes on Sub Common Expression Elimination.

SECTION B

Q2. Attempt any two parts of the following: 6*2=12

a. Construct the Syntax Tree using SDD for the expression- x*y-5+z with the help of Grammar as follows:

E→ E+T/ E-T/ E*T/ T
T→ id/ Num.

b. Check the given grammar is LL(1), LR (0), SLR(1), CLR(1) and LALR(1)or not? Given Grammar as follows:-

S→Aa/ bAc/ Bc/ bBa
A→ d
B→ d

c. Parse the given i/p string id +id * id using LL(1) parser for grammar-

E→E+T/ T

SECTION C

Q3. Attempt any two parts of the following: 5*2=10

a. Generate the Intermediate Code for Boolean Expression as follows- A<B AND B<C OR C<D with proper SDD of useful production rule of general Grammar.

b. Write down the SDD for While-do statement and generate Three Address Code for given expression

```
while ( A<C and B> D) do
{
   if A< 1
      then A=A+1
   Else B=B+1
}
```

c. Write the Quadruples, Triple and Indirect Triple intermediate code form of the following expression :-

(x+y) * (y+z) +(x+y+z).

SECTION D

Q4. Attempt any two parts of the following: 5*2=10

a. Write short notes on :-

i. Dominator
ii. Inner Loop and Outer Loop
iii. Reducible flow graph

b. Construct Operator precedence parser and then parse the following string (a, (a, a)).

Grammar:- S→ (L) / a
L→ L, S/ S

c. Check the given grammar is CLR (1) or not?

S→ CC