NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
Department Of Computer Science And Engineering

Compensation Class Test on

Compiler Design

Marks: 20 Course Code: CSPC62 Time: 1hr

Instructions to the Students: Answer all questions.

1. How conflict resolution is done in Lex? Explain with examples for reversed keywords and relational operators. If keywords are not reserved, show using lookahead operator how Lex can correctly distinguish a keyword from a function or procedure. [2+2+2]

2. Consider the following code snippet

```
a. for (i=0; i<n; i++)
    i.  for (j=0; j<n; j++)
        1. for (k=0; k<n; k++)
           b. a[i, j] = a[i, j] + b[i, k]*c[k, j];
```

   b. Assuming a,b,c are allocated static storage, there are two bytes per word in a byte-addressed memory and matrices are stored in row-major order, produce three-address code for the matrix-multiplication program.
   c. Partition the program into basic blocks and find loops in the flow graph.
   d. Do the following code optimizations: code motion and removing induction variables wherever possible.
   e. Compute reaching definitions and ud-chains for the optimized flow graph from c.

[3+1+2+3]

3. Take the following grammar:

st → et ex en st el st | et st en st | in stList nd

stList → st ; stList | st

and the string:

et E1 en S1 el en E2 en S2 el S3

Can this statement be parsed using shift-reduce parser? If yes, show and explain the parsing table and indicate the handles in every step. [3+2]