Total No. of Questions: 05 Total No. of Printed Pages: 02

Roll No. _____

BTCSCS302

B.Tech. (CSBS -TCS)

V Semester Examination, December 2023

Compiler Design

Choice Based Credit System (CBCS)

Time: 3 Hrs. **Maximum Marks: 60**

Minimum Pass Marks: 24

Note: (1) All questions carry equal marks, out of which part 'A' and 'B' carry 3 marks and part 'C' carries 6 marks.

(2) From each question, part 'A' and 'B' are compulsory and part 'C' has internal choice.

(3) Draw neat diagram, wherever necessary.

(4) Assume suitable data wherever necessary.

Q.1(A) Explain the phases of Compiler and working of each phase in brief. **03**

(B) What is finite automata? Also relate regular expressions and finite automata. **03**

(C) Explain the Frontend and Backend of Compiler in brief. **06**

OR

Elaborate LEX with example? Give a brief explanation of "LEX" tools.

Q.2(A) Describe how to generate a string from CFG using leftmost derivation and rightmost derivation with suitable examples. **03**

(B) Compare and contrast Parse tree and Syntax tree with example? **03**

(C) Write a short note: **06**

(a) Classification of Parsers.

(b) Operator grammars.

OR

Consider the following Grammar and Construct the LL(1) Parser:

S -> A A -> BC | DBC B -> Bb | ε C -> c | ε D -> a | d

and check with String dbb.

Q.3(A) What is the need of Semantic analysis? Explain with suitable examples. **03**

(B) Compare and contrast S-attribute Definitions (Synthesized) and L-attribute Definitions (Inherited). **03**

(C) Describe various parameters passing mechanism using suitable examples. **06**

OR

Elaborate the role of Symbol Table, it's basic structure, attributes and management techniques.

Contd.....

Q.4(A) Describe various code optimization methods with examples. **03**

(B) Illustrate how to represent three address code using Quadruples, Triples and Indirect Triples with suitable example. **03**

(C) Construct Three address code for following statements: **06**

```
repeat
x=y+z
until x>20
```

OR

Construct Three address code for following statements:

```
for(n=1;n<10,n++)
{
y=y+5
}
```

Q.5(A) Construct DAG for following statement:

a=a*(b-c)+(b-c)*d **03**

(B) Describe the different data structures used in Runtime Storage management. **03**

(C) Elaborate loop optimization with suitable example. **06**

OR

Illustrate Peephole Optimization with suitable examples.

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