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

Roll No. _____

BTCSIBM601

B.Tech. (CSE-BDAI/ CSE-DSI)

VII Semester Examination, December 2023

Fundamental of 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 with a diagram. **03**

(B) Describe input Buffering. Also explain Single Buffering and Double Buffering Schemes. **03**

(C) What is LEX? Describe auxiliary definitions and translation rules for LEX with suitable examples. Give a short description on "LEX" tools. **06**

OR

Differentiate between Single Pass and Multi-Pass Compiler.

Q.2(A) Explain the leftmost and rightmost derivations with suitable examples. **03**

(B) Differentiate between Parse tree and Syntax tree with example. **03**

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

(a) YACC

(b) Ambiguous Grammar

OR

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

S -> iEtSS' | a

S' -> eS | ε

E -> b

Q.3(A) What is Syntax Directed Definition? Also, explain its roles in translation. **03**

(B) Differentiate between S-attribute Definitions (Synthesized) and L-attribute Definitions (Inherited). **03**

Contd.....

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

do

x=y+z

while x<20

OR

Construct Three address code for following statements:

for(i=1;i<20,i++)

{

x=x+1

}

Q.4(A) Illustrate optimization techniques with suitable examples. **03**

(B) Describe Quadruples, Triples with suitable example. **03**

(C) Construct DAG for following statement: **06**

a=b * minus c + b * minus c

OR

Explain the working of Error Handler. Also explain Error detection and recovery mechanisms.

Q.5(A) Explain the challenges of the design of target code generation. **03**

(B) Illustrate about the various data structures used in Runtime Storage management. **03**

(C) Describe how Global Data Flow Analysis is useful for code optimization. **06**

OR

Illustrate why Peephole Optimization is useful for target code optimization.

xxxxxxx