

BTCS601

B.Tech/ B.Tech.+M.B.A./ B.Tech.+M.Tech.(CSE, CSE-CF, CSE-AII, CSE-ES,
CSE-MA, CSE-CMCI, BDCE-Impetus, CSE-FSDI, CSE-ICS, IT)

VII 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)** Describe the Compiler and its phases with a neat and clean diagram. **03**
(B) What is input Buffering? Describe the techniques of Single Buffering and Double Buffering Schemes. **03**
(C) Explain the "Analysis-Synthesis Model" using Frontend and Backend of a Compiler. **06**

OR

What is LEX? Give a short description on "LEX" tools.

- Q.2(A)** Explain the leftmost derivation tree and rightmost derivation tree with suitable examples. **03**
(B) Differentiate between Parse tree and Syntax tree with an example. **03**
(C) Write a short note: **06**
 (a) Ambiguous Grammar.
 (b) Operator Precedence and Associativity.

OR

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

$S \rightarrow A$ $A \rightarrow BC \mid DBC$ $B \rightarrow Bb \mid \epsilon$ $C \rightarrow c \mid \epsilon$ $D \rightarrow a \mid d$

and check with String dbb.

- Q.3(A)** What is Syntax Directed Translations? Also, explain its roles. **03**
(B) Differentiate between S-attribute Definitions (Synthesized) and L-attribute Definitions (Inherited). **03**

Contd.....

(C) Construct Three address code for following statements:

06

```
i=1
while i<=10 do
x=x+1
i=i+1
```

OR

Construct Three address code for following statements:

```
if a>b and c>d
then x=y+z
else x=x+1
```

Q.4(A) What do you mean by code optimization? Explain the principle sources of optimization with suitable examples. 03

(B) Describe how to construct Quadruples, Triples and Indirect Triples with suitable example. 03

(C) Construct DAG for following statement: 06

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

OR

Write short note on error detection and recovery.

Q.5(A) Discuss the issues of the design of target code generator. 03

(B) Describe the various data structures used in runtime Storage management. 03

(C) Elaborate Global Data Flow Analysis with suitable example. 06

OR

Describe Peephole Optimization with suitable examples.

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