

7th Sem. Dec. 2022

Exam.Code:0925
Sub. Code: 6542

2122
B.E. (Information Technology)
Seventh Semester
IT-703: Compiler Design

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- Explain any three tools that help a programmer in building a compiler efficiently.
- Identify the lexemes and their corresponding token in the following statement:

```
printf("Simple interest=%f\n", si);
```
- Is the grammar $S \rightarrow S(S)S| \epsilon$ is ambiguous? Justify your answer.
- Describe the term environment and state.
- What are annotated parse tree? Give example. (5x2)

UNIT - I

II. Explain the working of different phases of compiler. Illustrate with a source language statement. (10)

- III. a) Explain how regular expressions and finite state automata are used for the specification and recognition of tokens?
b) Draw the transition diagram for the regular definition

$relop \rightarrow <|<|=|<>|>|=|>$ (2x5)

IV. Construct LALR(1) parsing table for the following grammar:

$S \rightarrow As|b, A \rightarrow SA|a$ (10)

UNIT - II

V. a) Explain synthesized and inherited attributes with example of each.

- b) Write three address code for the statement $x=y*z + y*-z$. Also give its triple representation. (2x5)

VI. What is the role of symbol table? Compare and contrast the different data structures used for symbol table. (10)

VII. a) Efficient Register allocation and assignment improves the performance of object code. Justify this statement with suitable examples.

- b) Explain briefly about the principle sources of optimization. (2x5)

x-x-x