

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 36201

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Sixth Semester

Computer Science and Engineering

01UCS601 - PRINCIPLES OF COMPILER DESIGN

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What is the need for separating the analysis phase into lexical analysis and parsing?
2. Depict diagrammatically how a language is processed.
3. Identify the lexemes that make up the tokens in the following program, Give reasonable attribute values for the tokens.
`int max (i, j) int i, j; {return i > j? i: j;}`
4. Differentiate between final states in a NFA and a DFA.
5. Context free grammars are capable of describing the syntactic categories of any programming language should it be unambiguous always for giving as input to any compiler construction tool?
6. Write the drawbacks of shift-reduce parser.
7. Illustrate why every S-attributed definition is L-attributed.
8. What is annotated parse tree?
9. What is flow graph?
10. What is peephole optimization?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain in detail the process of compilation. Illustrate the output of each phase of compilation for the input

“a = (b + c) * (b + c) * 2”. (16)

Or

- (b) (i) Write a note on language processors. (12)

(ii) Discuss about compiler construction tools. (4)

12. (a) Convert the regular expression $(a/b)^*ab^*\#$ to DFA directly. (16)

Or

- (b) Design a Lexical analyzer generator. Also write the sample code which includes declaration, translation rules and auxiliary procedures. (16)

13. (a) Construct the parsing table for the grammar

$S \rightarrow iEtSS' \mid a$

$S' \rightarrow eS \mid \epsilon$

$E \rightarrow b$

and design a syntax analyzer for a sample language. (16)

Or

- (b) Consider the following grammar

D \rightarrow type tlist;

t \rightarrow double | float

tlist \rightarrow tlist, id | id

Construct SLR parsing table and find whether string double id, id; is correct or not using the table. (16)

14. (a) For the following given grammar construct the syntax directed definition and generate the code fragment using S-attributed definition

$S \rightarrow EN$

$E \rightarrow E + T \mid E - T \mid T$

$T \rightarrow T * F \mid T / F \mid F$

$F \rightarrow (E) \mid \text{digit}$

$N \rightarrow ;$

(16)

Or

- (b) Discuss the various storage allocation strategies and their merits and demerits. (16)
15. (a) (i) Elaborate the issues involved in design of a code generator. (8)
- (ii) Explain looping and flow graphs. (8)

Or

- (b) Explain the code optimization techniques using examples. (16)

