

R18

Code No: 156AH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, August - 2022

COMPILER DESIGN
(Computer Science and Engineering)

Time: 3 Hours

Max.Marks:75

Answer any five questions
All questions carry equal marks

- 1.a) What are the advantages of a compiler over an interpreter?
- b) Draw the structure of a compiler and describe various phases in the compilation process mention the output of the following statement: $id_1=id_2+id_3*50$ at each phase. [5+10]
- 2.a) Design the LEX program that recognizes the tokens of a C language and returns the token found.
- b) Give the DFA and NFA to accept the strings containing a, b such that the string contains even number of a's and odd number of b's. [7+8]
- 3.a) Remove the left recursion for the following grammar and also find FIRSTS and FOLLOWS.
 $E \rightarrow E + T \mid T$
 $T \rightarrow T * F \mid F$
 $F \rightarrow (E)/id$
- b) Write the steps/algorithm to construct the predictive parser table and explain with an example. [7+8]
- 4.a) Construct the Recursive Descent Parser with backtracking for the following grammar:
 $S \rightarrow aSbS \mid bSaS \mid \epsilon$
- b) Compute LR(0) items for the following grammar and construct SLR parser table: [7+8]
 $S \rightarrow L=R \mid R$
 $L \rightarrow *R \mid id$
 $R \rightarrow L$
- 5.a) Construct the syntax directed definition to convert infix notation into postfix notation.
- b) Describe different ways of implementing intermediate code generation of a three-address statement. [8+7]
- 6.a) Explain how an L-attributed grammar is converted into a translation scheme.
- b) Compare and contrast S-Attributed definitions with L-Attributed definitions. [8+7]
7. How is stack storage allocation strategy different from heap allocation strategy? Describe them mentioning their merits and demerits. [15]
8. Explain the foundations and basic notations used in data-flow analysis for optimizations with examples. [15]

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