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322612(22)

B. E. (Sixth Semester) Examination, April - May 2021

COMPILER DESIGN

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each question is compulsory and carries 2 marks. Attempt any* ***two*** *parts from (b), (c) and (d) which carry 7 marks each.*

Unit-I

1. (a) Explain boot strapping and cross compiler 2

(b) Draw the transition diagram and corresponding

code that recognizes : 7

(i) Identifiers

(ii) Relational Operators

(c) Describe various phases of Compiler. 7

(d) What are different compiler construction tools? 7

Unit-II

2. (a) Write four components of context free grammer. 2

(b) Show that following grammar is not a SLR (1). 7

$S \rightarrow L = R$

$S \rightarrow R$

$L \rightarrow \alpha R$

$L \rightarrow id$

$R \rightarrow L$

(c) Explain operator precedence parsing with example. 7

(d) Construct CLR parser for the grammar given below and show the action of parser for valid input string

$(a, \wedge)$ 7

$S \rightarrow a \mid \wedge \mid (R)$

$T \rightarrow S.T \mid S$

$R \rightarrow T$

Unit-III

3. (a) Define syntax directed translation. 2

(b) Write short notes on : 7

(i) Three address code

(ii) Translation

(c) Differentiate S-attribute and L-attribute with example. 7

(d) Define syntax tree. Write function for constructing syntax trees and draw syntax tree for the expression: 7

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

Unit-IV

4. (a) Define activation record. 2

(b) Name various techniques for storage allocation. Differentiate between stack and heap allocation. 7

(c) What is parameter passing? Explain various methods of parameter passing. 7

(d) Write a note on dynamic storage allocation. 7

Unit-V

5. (a) Define code optimization. 2

(b) Describe the implementation of basic block with the help of DAG and by using algebric identities. 7

(c) Explain in brief issues in the design the code generator. 7

(d) Generate the assembly code for the following statement: 7

$$X := a / (b + c) - d * (e + f)$$