CSE 6th/ Library

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BT-6/M-23 **46165**

COMPILER DESIGN

Paper–PC-CS-302A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions, selecting at least *one* question from each unit.

UNIT–I

1. (a) What is Regular Expression ? Write an algorithm to convert regular expression into NFA. 9

(b) Draw NFA for the Regular Expression a(a + b)*ab.

(c) Draw NFA for a + b + ab.

(d) Draw NFA corresponding to (0 + 1)*1(0 + 1).

(2+2+2)

2. What are different phases of compiler and explain the role of different phases. 15

UNIT–II

3. (a) What is parsing? Explain top, down and bottom up parsing with the help of example. 9

(b) E - - - → T
T - - - → T*F
T - - - → id
F - - - → T
F - - - → id

Draw parse tree representation of above expression for id*id. 6

4. What is LALR(1) parsing ? Draw DFA and parsing table for the following equation :

S - - - → AA

A - - - → aA

A - - - → b. 15

UNIT–III

5. (a) What is heap allocation and stack allocation? Prove it by taking an appropriate example. 10

(b) What are different issue is designing of code generator? 5

6. What is DAG and write its algorithm ? For the following statements :

1. Sl:=4*i
2. S2:=a[Sl]
3. S3:=4*i
4. S4:=b[S3]
5. S5:=S2*S4
6. S6:=prod*S5
7. S7:= i+1

i:=S7

if i<=20 goto 1 15

UNIT–IV

7. What are different source of optimization ? Explain the following optimization in detail with example :

   (a) Machine independent optimization.

   (b) Loop optimization.

   (c) Peephole optimization. 15

8. What is Global data flow analysis ? Explain Storage organization, static storage management and heap storage management with the help of example. 15