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Reg. No. : | | | | | | | | | | |

Question Paper Code: 56803

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

Sixth Semester

Information Technology

15UIT603- COMPILER DESIGN

(Regulation 2015)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Back end of the compiler depends on the phase of_____ CO1- R

   (a) Semantic (b) Syntax (c) Intermediate code (d) Lexical

2. Context Free Grammar belongs to which category CO2- R

   (a) Type 0 (b) Type 1 (c) Type 2 (d) Type 3

3. In which parse tree value of the attribute is defined? CO3- R

   (a) Annotated tree (b) Dependency graph

   (c) Syntax tree (d) Directed Acyclic graph

4. How much cost is required to complete the register statement Mov mem,Reg CO4- R

   (a) 2 (b) 1 (c) 4 (d) 3

5. D.Gries approach is used to build_____ CO5- R

   (a) DAG (b) Basic block (c) Flow graph (d) Syntax tree

PART – B (5 x 3= 15 Marks)

6. Define regular expression? Write the algebraic properties of regular expression. CO1- R

7. Enumerate the storage allocation strategies. CO2- R

8. Construct the syntax tree for the following expression CO3- R

X=a*c/d+a*-c

9. Compare basic block and flow graph. CO4- R

10. Mention the properties code optimization. CO5- R

PART – C (5 x 16= 80 Marks)

11. (a) Discuss the following CO1- Ana (16)
(i) Compiler Construction Tools
(ii) Input buffering in compiler process

Or

(b) Analyze the various phases of compiler with the expression CO1- Ana (16)
A=(B*C)/(X-Y)+(E+F).

12. (a) Generate SLR parsing table for the following grammar. And parse the sentences bdc and dd CO2- Ana (16)

S->Aa | aAc | Bc | bBa
A->d
B->d

Or

(b) (i) Explain in detail source language issues. CO2- Ana (8)

(ii) Generate the CFG for the language $a^n aab^n$,where n>=0. CO2- Ana (8)

13. (a) Explain the back patching technique with the following grammar. CO3- Ana (16)
E -> E_1 or E_2 | E_1 and E_2 | not E_1 | (E_1) | id_1 relop id_2 | true | false .

Or

(b) (i) Discuss the semantic rule for the following productions CO3- Ana (8)
L -> E Return
E - > E+T
E -> T
T -> T*F
F -> (E)
F -> digit

(ii) Construct annotated parse tree and dependency graph for the expression 10+5*5 based on the above grammar. CO3- Ana (8)

14. (a) Write notes on CO4- U (6)

(i) Runtime storage environment

(ii) Simple code generator CO4- U (10)

Or

(b) Explain the procedure for DAG with the following code CO4- U (16)

1. t1:=4*i
2. 2. t2:=a[t1]
3. 3. t3:=4*i
4. t4:=b[t3]
5. 5. t5:=t2*t4
6. 6. t6:=prod+t5
7. prod:=t6
8. 8. t7:=i+1
9. 9. i:=t7
10. if i<=20 goto (1)

15. (a) Explain in detail about principle sources of code optimization. CO5- U (16)

Or

(b) Elaborate the global data flow analysis with suitable examples. CO5- U (16)