R13

Code No: 115AP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, November/December - 2016

COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Write a brief note on bootstrap process. [2]
b) What are the differences between a compiler and an interpreter? [3]
c) Give the specification of the YACC parser generator. [2]
d) Construct the LR(0) items for the “dangling-else” grammar. [3]
e) How to check structural equivalence of two type expressions? [2]
f) Define and write the differences between synthesized attributes and inherited attributes. [3]
g) Write a short note on Flow graph. [2]
h) Write an algorithm for constructing a basic block. [3]
i) Define various possible outputs of the code generator. [2]
j) Construct DAG for the following basic block: [3]

T1=A+B
T2=C+D
T3=E – T2
T4=T1– T3

PART - B

(50 Marks)

2.a) Explain various error recovery strategies in lexical analysis.

b) Construct a Finite Automata and Scanning algorithm for recognizing identifiers, numerical constants in C language. [5+5]

OR

3. Explain the various phases of a compiler with an illustrative example. [10]

4. Construct the LR Parsing table for the following grammar: [10]

E→E + T | T
T→T * F | F
F → (E)/id

OR

5.a) Write a YACC program that will take regular expression as input and produce its parse tree as output.

b) Write an algorithm for computing LR(k) item sets. [5+5]

6.a) Write an SDT to convert infix to postfix expression.
b) Explain briefly about polymorphic functions. [5+5]

OR

7. Explain various storage allocation strategies with its merits and demerits. [10]

8. Discuss various techniques of function preserving transformations for code optimization. [10]

OR

9. Explain how data flow equations are set up and solved for improving code. [10]

10. Explain the following peephole optimization techniques: [5+5]
a) Elimination of Redundant Code
b) Elimination of Unreachable Code.

OR

11. Explain in detail about machine dependent code optimization techniques with their drawbacks. [10]

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