R13

Code No: 115DR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, March - 2017

AUTOMATA AND COMPILER DESIGN

(Information Technology)

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) Define e-closure with example. [2]
b) What are the issues in lexical analysis? [3]
c) Define 'Handle Pruning' in bottom-up parsing. [2]
d) Define annotated parse tree. [3]
e) What is type expression? [2]
f) What is meant by structural equivalence? [3]
g) What is a Basic Block? [2]
h) What is an activation record for a procedure? [3]
i) What is meant by assembly language code? [2]
j) Define DAG with example. [3]

PART - B

(50 Marks)

2. Explain various phases of compiler and trace it with the program segment
x = a + b * 60. [10]

OR

3.a) Draw NFA for the regular expression for ab*/ab.
b) What is Left Recursion? Eliminate left recursion from the following grammar: A->Ac/Aad/bd/c. [5+5]

4. Construct canonical parsing table for the grammar given below [10]
S->Aa/bAc/bBa
A->d
B->d

OR

5.a) Explain in detail about syntax directed translation.
b) Write the syntax directed translation for declarations. [5+5]

6. Explain the specification of a simple type checker. [10]

OR

7.a) Consider following grammar:
E->num.num/literal/num/E%E/E+E/ E/E/ *E/ E[E]
Construct semantic rules to find type of expression.
b) Give an algorithm to test the equivalence of C types. [5+5]

8. Describe the method to obtain faster access to nonlocals. [10]

OR

9. Explain different principles source of optimization technique with suitable examples. [10]

10.a) Explain the issues in design of code generator.

b) Explain simple code generator with suitable example. [5+5]

OR

11. Explain in detail register allocation and assignment. [10]

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