Code No: 115AP

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2017
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 regular expression over alphabet {a, b, c} containing at least one 'a' and at least one 'b' [2]
b) What is input buffering? How is input buffering implemented? [3]
c) What is operator precedence grammar? Give an example. [2]
d) What is significance of lookahead operator in LR parsing? [3]
e) What is the s – attributes and l – attributes? [2]
f) What is activation record? [3]
g) What is dead code elimination and reduction in strength? [2]
h) Define loop unrolling. Give an example. [3]
i) What is meant by register descriptor and address descriptor? [2]
j) How to allocate registers to instruction? [3]

PART – B

(50 Marks)

2.a) Explain the concept of bootstrapping with example.
b) Consider the following Conditional statement:
if (x > 3) then y = 5 else y = 10;
How does lexical analyzer help the above statement in process of compilation? [4+6]

OR

3. Construct predictive parsing table for the following grammar [10]
S → (L) | a
L → L, S | S

4. Find the LR (0) set of items for the following grammar. Describe state diagram and construct parse table of that [10]
S → CC
C → cC |d

OR

5.a) Write a procedure to construct LALR parsing table.
b) Write short notes on YACC. [5+5]

6. What is symbol table? Discuss various ways to organizing symbol table. [10]

OR

7. Translate the following expression:
(a + b) * (c + d) + (a + b + c) into
a) Quadruples b) Triples c) Indirect triples [3+3+4]

8.a) What is liveness? Explain liveness with suitable example.
b) Write a procedure to identify basic blocks. [5+5]

OR

9. Illustrate loop optimization with suitable example. [10]

10. Explain various method to handle peephole optimization. [10]

OR

11. Generate the code for the following expression: x = (a + b) – ((c + d) – e). Also Compute its cost. [10]

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