



B.Tech III Year II Semester (R13) Regular & Supplementary Examinations May/June 2017 **COMPILER DESIGN**

(Information Technology)

Max. Marks: 70

Time: 3 hours

PART – A

(Compulsory Question)

- 1 Answer the following: $(10 \times 02 = 20 \text{ Marks})$
 - Compare compiler and interpreter. Also write advantages and disadvantages of both. (a)
 - How applications of compiler technology improve levels of abstraction in the generation of programming (b) languages?
 - Differentiate recursive descent parsing and predictive parsing. (C)
 - Construct all possible parse trees corresponding to the string i+i*k. (d)
 - Explain quadruple and triple with example. (e)
 - What are different forms of target programs? (f)
 - (g) What is dead code? Give suitable example.
 - Give difference between heap storage and hash table. (h)
 - What is peephole optimization? (i)
 - (j) Generate code for x = *p for target machine.

PART – B

(Answer all five units, $5 \times 10 = 50$ Marks)

UNIT – I

2 What is significant use of regulator expression in lexical analysis? Give rules to define regular expression over alphabets and algebraic laws for regular expression.)

OR

3 How is input buffering solve look ahead problem with sentinels? Support answer with look ahead pseudo code with sentinels.

UNIT – II

- www.First Consider following grammar: 4
 - $E \rightarrow EBE$
 - $E \rightarrow num$
 - $E \rightarrow (E)$
 - $B \rightarrow +$
 - $B \rightarrow -$
 - $B \rightarrow *$
 - $B \rightarrow \backslash$
 - (i) Explain why this grammar is suitable to form the basis for recursive descent parsing.
 - (ii) Use left factoring and left recursion removal to obtain an equivalent grammar that can be used an the basis for a recursive descent parsing.

OR

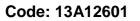
5 Show that following grammar is unambiguous:

 $S \rightarrow aSb / bSa / b$ for string 'abbbaabbbaaab'. Also draw a parse tree.

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UNIT – III

6 Describe various representations of three address codes. Translate the expression: -(a+b)*(c+d)+(a+b+c) into quadruples and triples.

OR

- 7 What is S-attribute and L-attribute syntax directed definition (SDD)? Obtain the postfix syntax directed translation for: $S \rightarrow EN$
 - $$\begin{split} S &\rightarrow E + T \, / \, E T \, / \, T \\ T &\rightarrow T * F \, / \, T \, / \, F \, / \, F \\ F &\rightarrow (E) \, / \, digit \\ N &\rightarrow ; \end{split}$$

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UNIT – IV

8 Explain in detail the strategy for reducing fragmentation in heap memory.

OR

9 Why run time storage management is required? How is simple stack implemented?

UNIT – V

- 10 Explain code generation algorithm and generate code for w = (A B) + (A C) + (B C).
 - OR
- 11 Explain main issues in code generation.

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